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XI

REPORT UPON A COLLECTION OF HEMIPTERA
MADE BY WALTER M. GIFFARD IN 1916
AND 1917, CHIEFLY IN CALIFORNIA

BY

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Mr. Walter M. Giffard of Honolulu has very kindly turned over to me for study all the Hemiptera taken by him in California and adjacent states during the summers of 1916 and 1917. Most of his collecting was done in central California, largely about San Francisco Bay region, a district in which little systematic collecting of the Hemiptera has heretofore been attempted. Many general collectors have worked about this portion of the state and a considerable number of the Hemiptera taken have been described by the entomologists of Europe and the eastern United States. Among the principal papers including such material may be mentioned Stål's Report on the Hemiptera of the Fregatten Eugenies expedition, Uhler's Report on the Hemiptera from west of the Mississippi River and his Report on the Hemiptera of Lower California, Ball's various papers on western Jassids and one by the writer on a few Hemiptera collected by Mr. D. W. Coquillette in California. But two general faunal papers on our California Hemiptera have yet been published, both by the present writer, one in 1914 covering his work in San Diego Co. and includ-

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ing 392 species, the other enumerating 140 species taken by him during July, 1915, at Fallen Leaf Lake in the Tahoe region. The present paper enumerates 355 species and gives a somewhat similar survey of the Hemiptera of central western California together with a few forms taken by Mr. Giffard in the Sierra and elsewhere.

The material taken by Mr. Giffard was obtained during a few short collecting trips he was able to make to some of the more interesting and promising localities about the bay and elsewhere, and altogether represents but a comparatively few hours of actual work. That he was able to secure so many rare and interesting species is but another indication of the systematic methods of collecting which has characterized his work here and on the Hawaiian Islands. His notes on food-plants, habits, etc., have mostly been left for future elaboration and publication. Some of the more important localities he visited are listed below to save the repetition of details.

San Francisco, collections made at Lands End, Presidio and Forest Hills on various dates.

Crystal Springs, San Mateo Co., between middle and lower lakes, about west of San Mateo.

San Mateo Co., June 17, 1917, near shore of San Francisco Bay; June 20, 1917, along La Honda Road among the hills.

Portola Valley, San Mateo Co., west of Stanford University. Los Altos, Santa Clara Co., July 26, 1916.

Santa Cruz Co., on road to Great Basin, June 8, 1917, 1200-1500 feet elevation; June 9, 1917, 600 feet elevation.

Monterey Co., June 10, 1917, near Del Monte; June 11, 1917, near Pacific Grove on sand dunes.

Muir Woods, Marin Co., among and near the redwood trees, elevation 200 feet.

Mt. Tamalpais, Marin Co., work at West Point, 1300 feet elevation.

Dublin Canyon, Alameda Co., west of Haywards.

Redwood Canyon, Alameda Co., collecting at upper end of canyon and on adjacent hills.

Tunnel Road, Alameda Co., about six miles east of Berkeley.

Contra Costa Co., along the Tunnel Road toward Walnut Creek.

Walnut Creek, Contra Costa Co., by road about four miles west of town.

Mt. Diablo, Contra Costa Co., at 1400 feet, at the summit, 3800 feet elevation, and at Mt. Diablo Park, at base of mountain.

San Joaquin Co., work near Stockton on May 30, 1917, and near Tracy on May 31, 1917.

Hoberg's Resort, Lake Co., and along the road to Lakeport, about 2500 feet elevation.

Clear Lake, Lake Co., on lake shore near Lakeport.

Blue Lakes, Lake Co., mostly at Laurel Dell on the lower lake.

Witter Springs, Lake Co., near Blue Lakes.

Sonoma Valley, Sonoma Co., work on oak and manzanita on the hills at the upper end of the valley beyond Cloverdale.

Hamilton Station, Tuolumne Co.

Wawona, Mariposa Co.

Placer Co., along road from Sacramento to Placerville and from Placerville to Lake Tahoe, 3900 feet to 5500 feet elevation.

Fallen Leaf Lake, Eldorado Co., 6300 feet elevation, mostly along the road to Glen Alpine Springs.

Tallac at southern end of Lake Tahoe, 6000 feet elevation.

Tahoe City and along road from Tahoe to Truckee, about 6000 feet elevation.

Donner Lake, Placer Co., work near borders of lake at about 6000 feet elevation.

Summit Station, Placer Co., 7000 feet elevation.

Soda Springs, Placer Co., 6600 feet elevation.

LIST OF THE SPECIES

1. *Homæmus ancifrons* (Say). Summit, August 24, 1916. One adult with young.
2. *Homæmus bijugis* Uhl. Tallac, August 22, 1916. Fallen Leaf Lake, August 21, 1916.
3. *Eurygaster alternatus* (Say). Crystal Springs, June, 1916, abundant on the swampy margins at the upper end of the lower lake; Redwood Canyon, August 6, 1916; Tallac, August 23, 1916.

4. *Thyreocoris ciliatus* (Uhl.) Soda Springs, August 24, 1916.
5. *Thyreocoris montanus* Van D. Summit, August 24, 1916.
6. *Brochymena quadripustulata* (Fabr.) Road near Hoberg's Resort, August 1, 1916, young; near Placerville, August 19, 1916, young; Niles Canyon, May 29, 1916, adults on trees.
7. *Peribalus limbolarius* Stål. Muir Woods, August 16, 1916.
8. *Chlorochroa congrua* Uhl. Forest Hill, San Francisco, June, 1916; Fallen Leaf Lake, August 21, 1916.
9. *Euschistus conspersus* Uhl. San Francisco, June and July, 1916; Crystal Springs, June; Yosemite, June 16, 1916.
10. *Necottiglossa cavifrons* (Stål). Mt. Diablo Park, July 23, 1916; near Cloverdale, August 3, 1916, on oak and manzanita; near Placerville, August 19, 1916.
11. *Cosmopepla conspicillaris* (Dall.) Muir Woods, August 16, 1916. Crystal Springs, June 25, 1916.
12. *Eysarcoris intergressus* Uhl. Yosemite, June 16, 1916.
13. *Thyanta custator* (Fabr.) Niles Canyon, May 26, 1916; Redwood Canyon, August 6, 1916; near Hoberg's Resort, August 1, 1916; Yosemite, June, 1916; near Placerville, August 19, 1916; Donner Lake, August 24, 1916.
14. *Murgantia histrionica* (Hahn). Near Stockton, May 25, 1917.
15. *Banasa dimidiata* (Say). Placer Co., August 20, 1916, 4500 feet elevation.
16. *Perillus exaptus* (Say). Donner Lake, August 24, 1916, one example of variety C as listed by me in 1905.
17. *Apateticus bracteatus* (Fh.) Fallen Leaf Lake, August 21, 1916, one pale example.
18. *Anasa tristis* (DeG.). San Francisco, July 1, 1916.
19. *Alydus scutellatus* Van D. Placer Co., August 20, 1916, 4500 feet elevation. This specimen is of a uniform deep black color, with only the tip of the scutellum, the very narrow base of the third antennal segment and the basal half of the first tarsal segment whitish. It has exactly the form and genital characters of *scutellatus* and should undoubtedly be referred to that species and not to *pluto*, which it much resembles.

20. *Tollius curtulus* Stål. Siskiyou, southern Oregon, July 10, 1917; Tallac, August 22, 1916. The latter, a female, differs from the more typical form of the species in having the elytra pale, regularly and conspicuously maculated with fuscus.

21. *Tollius setosus* (Van D.) Santa Cruz Co., May 8, 1917. The most abundant form in the coast counties.

22. *Coriomeris humilis* (Uhl). Santa Clara Co., June 11, 1917; Portola Valley, May 14, 1917; Muir Woods, July 15, 1917.

23. *Aufius impressicollis* Stål. Near Stockton, May 30, 1917.

24. *Harmostes reflexulus* (Say). Crystal Springs, June 25, 1916; Los Altos, July 26, 1916; Blue Lakes, August 3, 1916; Tallac, August 22, 1916; Portland, Oreg., July 5, 1917; Seattle, Wash., July 7, 1917. The pink form described by Dr. Bergroth as *bruesi* seems to me to be identical with the typical form of this species. It is the most abundant phase of this species as found in California.

25. *Corizus hyalinus* (Fabr.) Crystal Springs, June 25, 1916.

26. *Corizus validus* Uhl. Yosemite, June 16, 1916; Fallen Leaf Lake, August 21, 1916.

27. *Corizus lateralis* (Say). Los Altos, July 26, 1916; Clear Lake, August 2, 1916, on shore weeds; Soda Springs, August 24, 1916.

28. *Corizus scutatus* (Stål). Walnut Creek, August 10, 1916, one deeply colored example.

29. *Corizus indentatus* Hambl. Muir Woods, August 16, 1916; Mt. Diablo Park, July 23, 1916; Wawona, June 17, 1916; Portland, Ore., July 3, 1917.

30. *Leptocoris trivittatus* (Say). Tunnel Road, Alameda Co., May 3, 1917; nymphs taken July 17, 1917.

31. *Aradus depictus*, new species

Allied to *duzei* and *cincticornis*. Dark brown; third antennal joint soiled white; an oval spot on the expanded pronotal margin white; elytra whitish varied with fuscus, abdomen tinged with fulvus. Length 6-6½ mm.

Male: Oblong. Head one-fourth longer than the median line of the pronotum; median process parallel, attaining the basal fourth of the second antennal segment; antenniferous tubercles small, acute, their tips not

quite attaining the first segment, their outer margin armed with a median tubercle, which becomes a small spine in the female; vertex with a smooth, depressed vitta either side, thus leaving three rounded granulated ridges. Eyes as in *duzci*, prominent, without a post-ocular tubercle. Antennæ rather slender, nearly as long as the head and pronotum united; first segment a little longer than wide; second moderately narrowed to the base; third and fourth together scarcely longer than the second, becoming slightly thinner apically; fourth three-fourths the length of the third. Pronotum short, the expanded sides forming an angle at the humeri, the latero-anterior margins rectilinear, the latero-posterior nearly so, these margins with about five rather large teeth anterior to the humeri and some finer granulations posteriorly; posterior excavation shallow; the six dorsal carinæ prominent, the lateral abbreviated at the expanded margin; marginal carina of the scutellum much elevated. Elytra about as wide as in *duzci*, attaining the apex of the ultimate tergal segment. Margin of the abdomen evenly rounded, with but a small notch at each incisure genital plate truncately rounded, unarmed.

Color dark fuscous brown; basal segment of antennæ touched with ferruginous; third segment pale yellowish, with its immediate base black; apex of the last segment clothed with pale hairs; hind edge of the pronotum touched with ochraceous; expanded latero-anterior margins with an elongated white spot. Scutellum black at apex, the marginal carina with a median white mark. Elytra whitish, varied with black, especially toward the apex, the extreme tip black. Membrane pale fuscous, varied with whitish. Coxæ, trochanters, knees, tibiæ in large part and base of the tarsi pale. Abdomen dark castaneous varied with blackish and tinged with coppery green at apex.

Female: Abdomen broader and more ovate, expanded margins of the pronotum more broadly rounded, second antennal segment more swollen, oval white spots on the pronotal margins larger and the general color paler than in the male. The abdomen of the female is bright castaneous, with the margins and a squarish spot within on each segment whitish, and the venter is marked with a squarish black spot, ocellate with bluish, on either side of the third, fourth and fifth segments, about which the general color is paler. Legs pale, the femora and tibiæ biannulate with fuscous; genital plates rather narrow and a little sinuated at apex.

Described from a male taken by Mr. Giffard in Niles Canyon, May 23, 1917, and a female taken in the hills near Claremont, Calif., by a Mr. Metz, and sent to me for study by Dr. Hilton of Pomona College.

Holotype (No. 329), male, in collection of the California Academy of Sciences.

Allotype, female, in the author's collection.

32. *Aradus behrensi* (Bergr.) Summit, July, 1907, one example.

33. *Aradus lugubris* Fall. Near Hoberg's Resort, August 2, 1916.

34. *Aradus falleni* Stål. Mt. Tamalpais, 1300 feet, August 16, 1916.

35. *Neides muticus* (Say). Muir Woods, July 26, 1916; July 15, 1917; Walnut Creek, August 10, 1916; near Middleton, Lake Co., August 1, 1916; Wawona, June 17, 1916.

36. *Jalysus spinosus* var. *wickhami* (Van D.) Los Altos, July 26, 1916.

37. *Acanthophysa echinata* Uhl. Wawona, June 17, 1916. Ashmead seems to have had before him this species or one closely allied when he drew up his description of *Hoplinus multispinus*. Barber identifies *multispinus* with my *perclavatus*, but the latter is a larger insect with none of the characters distinguishing *Hoplinus* and disagreeing fundamentally with Ashmead's description.

38. *Oncopeltus fasciatus* (Dall.) Lake Co., near Clear Lake, on purple milkweed. Also taken at Summit, Placer Co.

39. *Lygæus reclinatus* Say. Lake Co., August 2, 1916, in company with the preceding; near Stockton, May 30, 1917.

40. *Lygæus pyrrhopterus* Stål. Near Stockton, May 30, 1917.

41. *Ortholomus longiceps* Stål. San Mateo Co., June 17, 1917. One example of the pale form was taken at Los Altos in July, 1916.

42. *Nysius californicus* Stål. Monterey Co., June 10, 1917; shores of Clear Lake, Lake Co., August 2, 1916; common at Fallen Leaf Lake, August 22, 1916.

43. *Nysius ericæ* (Schill.) San Francisco, July 18, 1917; July 18, 1916; Niles Canyon, May 26, 1917; July 24, 1916; Redwood Canyon, July 2, 1916; Muir Woods and Mt. Tamalpais, August 16, 1916; Los Altos, July 26, 1916; near Middleton, Lake Co., August 1, 1916.

44. *Ischnorrhynchus resedæ* (Panz.) Yosemite, June 16, 1916.

45. *Ischnorrhynchus geminatus* Say. Seattle, July 7, 1917.

46. *Ischnorrhynchus franciscanus* (Stål). Redwood Canyon, July 2 and August 6, 1916; Mt. Tamalpais, August 16, 1916; Los Altos, July 26, 1916; Santa Cruz Co., June 7, 1917; Monterey Co., June 11, 1917.

47. *Arphnus coriacipennis* (Stål). Portola Valley, San Mateo Co., May 4, 1917; Santa Cruz Co., June 9, 1917; near Stockton, May 31, 1917.

48. *Cymus luridus* Stål. Seattle, July 7, 1917.
49. *Geocoris bullatus* (Say). Soda Springs, Placer Co., 5600 feet, August 24, 1916.
50. *Geocoris pallens* Stål. San Francisco, July 18, 1916; Muir Woods, July 15, 1917; Niles Canyon, July 24, 1916; Santa Cruz Co., June 7, 1917; Monterey Co., June 10, 1917; Contra Costa Co., June 14, 1917; Laurel Dell, Lake Co., August 2, 1916; Placer Co., 4500 feet, August 20, 1916.
51. *Geocoris pallens* var. *decoratus* Uhl. Fallen Leaf Lake, 6400 feet, August 21, 1916.
52. *Geocoris atricolor* Montd. San Francisco, July 18, 1916; Muir Woods, July 15, 1917; Santa Cruz Co., June 7-8, 1917; Monterey Co., June 10, 1917.
53. *Crophius bohemani* (Stål). Portola Valley, San Mateo Co., May 4, 1917; Los Altos, July 26, 1916; Placer Co., August 19, 1916, on oaks.
54. *Crophius impressus* Van D. Santa Clara Co., June 11, 1917.
55. *Ligyrocoris diffusus* (Uhl.) Tallac, August 22, 1916, young; Soda Springs, Placer Co., 6600 feet, August 24, 1916.
56. *Pcirtrechus tristis* Van D. San Francisco, July 18, 1916; Crystal Springs, San Mateo Co., June 25, 1916.
57. *Rhyparochromus sodalicus* (Uhl.) Santa Cruz Co., June 7-9, 1917.
58. *Scolopostethus tropicus* (Dist.) Niles Canyon, June 13, 1917; Santa Cruz Co., June 10, 1917.
59. *Euryophthalmus convivus* (Stål). San Francisco, June and July, on lupines in great numbers; near Cloverdale, Sonoma Co., August 3, 1916. Here, as in my catalogue, I have followed Distant's determination of this species, which I am almost convinced is erroneous. This species agrees exactly with the description and figure of Herrich-Schaeffer and it is very close to *succinctus* (Linn.) of the eastern states. It is the *cinctus* of my San Diego list and very distinct from the *cinctus* of the Biologia, the latter a Mexican species which may cross the border into Arizona and Texas.
60. *Piesma cinerea* (Say). Near Stockton, May 31, 1917.

61. *Corythucha maculata*, new species

Related to *fuscigera* Stål, but smaller with different areolæ and maculation. Length $3\frac{1}{4}$, width $1\frac{3}{4}$ mm.

Pronotal hood about as in *spinosa* Champ., but somewhat more produced and vertical before where it surpasses the apex of the first antennal joint; viewed from the side about one-half higher than the median carina and regularly arcuated above; viewed from above nearly globose behind, but not at all transverse; this portion not suddenly contracted before and with the areoles rather large and distinct, those of the anterior portion smaller; median carina more depressed anteriorly than in *spinosa* as figured by Champion, highest about the anterior one-third. Expanded sides of the pronotum elliptical before, almost suggesting an angle there, scarcely surpassing the first antennal joint; areoles small and regular, averaging about one-half the size of those on the posterior aspect of the hood, the marginal row scarcely larger than those of the disk; marginal spines short, but little more than half as long as the width of the marginal areoles. Scutellum shorter and broader than in *spinosa*, the elevated margins continued nearly across the pronotal disk. Closed elytra considerably narrowed posteriorly, each elytron widened nearly to its apex; areoles smaller at base with a few larger ones before the apical dark band; humeral angles well rounded; gibbosities rounded, scarcely higher than the median carina of the pronotum; marginal spines short like those of the pronotum.

Body deep black; legs and antennæ fulvo-testaceous, black at tip; membranous portion whitish-hyaline with white nervures; disk of the pronotum deep polished castaneous margined with black; nervures of the hood and expanded pronotal margins largely fuscous; scutellar carinæ white, the median with an oblique black vitta; pronotal margins with two fuscous spots, a smaller one before the middle and a larger one at the middle of the hind lobe; margin of the elytra with a similar spot placed about its own width behind the anterior edge, not attaining the humeri, and a transverse band of about the same width just beyond the tip of the abdomen; posterior aspect of the gibbosities fuscous, the discoidal region more obscure.

Described from eight examples taken at San Diego, Calif., May 30, 1913. Mr. Fordyce Grinnell has sent me the same species from Pasadena, taken in June, and from Prof. H. F. Wickham I have received a long series, taken at Nephi, Utah, June 30. I also took it at Boulder, Colo., July 21, 1903, and at Manitou, Colo., a few days later, and more recently Mr. Giffard has taken the same species in the Yosemite Valley, June 16, 1916; in Placer Co., at about 5000 feet altitude, August 20, 1916; on the shores of Clear Lake in Lake Co., August 2, 1916; in Muir Woods, August 16, 1917, and in Redwood Canyon, August 6, 1916.

This is the form I have listed as *fuscigera* from San Diego, but Champion's figure of that species shows it to be a larger insect, in which the pronotal hood is broader posteriorly and suddenly contracted near the middle; the anterior fuscous

spot of the elytra is extended to the humeral angle and the posterior spot is larger and reaches nearly to the apex and encloses about three large clear areoles. The present species differs from *obliqua* O. & D. in the form of the expanded pronotal margins, the character of the areoles and other points.

Holotype (No. 330), male, from San Diego, in collection of the California Academy of Sciences.

Allotype, female, from San Diego, in author's collection.

Paratypes, in both collections and in that of Mr. Giffard.

62. *Corythucha fuscigera* Stål? Lake Co., along the road between Hoberg's Resort and Lakeport on *Hoosackia crassifolia*, where it was abundant with its young, August 2, 1916. This may be distinct from Stål's species, but it agrees much better with Champion's figure than does the preceding. This species and its allies have probably formed the basis for the records of *fuscigera* in this country.

63. *Corythucha eriodictyonae* O. & D. Mt. Tamalpais, August 16, 1916; abundant at West Point. Very near *setosa* Champ., but perhaps distinct.

64. *Corythucha bullata*, new species

Closely allied to *juglandis* Fh., a little smaller than the average in that species, with the pronotal hood more spherical posteriorly and the elytral cyst larger and more prominent. Length $3\frac{1}{2}$ mm.; humeral width 2 mm.

Pronotal hood viewed from above globular behind, broader than in *juglandis*, more produced before, its apex considerably surpassing the second antennal segment, the areoles a little smaller and more numerous posteriorly; viewed from the side regularly rounded above, not at all subangulate as in that species. Expanded sides of the pronotum apparently narrower than in the allied species, surpassing the head by about one-half the width of the latter, the marginal spines shorter and black only at their extreme tips. The closed elytra more narrowed posteriorly, their discoidal area almost completely elevated in a large subglobular cyst which is more elevated than the median carina of the pronotum.

Body beneath deep black with the legs and antennæ pale; smooth portion of the pronotum and elytral markings fuscous brown, rather paler than in *juglandis*, the expanded areas whitish hyaline with the nervures soiled white; dorsal aspect of the pronotal hood brown, with the center of the large areoles paler; expanded sides of the pronotum with a faint irregular brown cloud exteriorly before the middle and sometimes a trace posteriorly. Elytra with a broad brown crescent following the humeral margin and usually attaining the discoidal area within, thus leaving a clear spot at the inner anterior angle of the costal area; tumid disk of

the discoidal area brown from before the middle; apex of the elytra with a broad transverse band omitting the marginal areoles and connecting with a longitudinal cloud on the overlapping sutural areas; pronotal carina white with the usual fuscous vitta.

Described from numerous examples taken about San Diego during May, July, October and November, and three examples taken by Mr. Giffard at Los Altos, July 26, 1916.

This form may best be distinguished by its having the discoidal cyst of the elytra large, covering most of the discoidal area. *C. incurvata* Uhl. is very similar to this but it is smaller, has the discoidal bullæ of the elytra smaller, the costa more deeply arcuated and the colors paler with the elytral vittæ faint.

Holotype (No. 331), male, from San Diego Co., in the museum of the California Academy of Sciences.

Allotype, female, from San Diego Co., in collection of the author.

Paratypes, in the author's collection and in that of Mr. Giffard.

Corythucha coelata Uhl is common on *Ceanothus* in San Diego Co., from March to May; Mr. Fordyce Grinnell has taken it at Pasadena in June, and Dr. J. C. Bradley has sent me specimens taken at Felton, Calif., in May, and at Palo Alto in September. Prof. H. F. Wickham has sent me a good series of *Corythucha hispida* Uhl taken at the Grand Canyon of the Colorado in Arizona.

65. *Physatocheila ornata*, new species

Form of *brevirostris*, a little broader than *plexa*; pale cinnamon varied with brown and buff; costal area with two series of irregular areoles. Length 4 mm.

Antennæ more slender than in any of our allied species, the third segment apparently about one-half the thickness of the second, this latter two-thirds as long and as wide at apex as the first, much narrowed basally; fourth clavate, distinctly longer than the first. Reflexed pronotal margins a little narrower than in *plexa*, leaving a wider area between the conspicuous carinæ, the surface as in *brevirostris* with a vague transverse line between the posterior angles of the reflexed margins behind which the areolæ are distinctly larger; in *plexa* these larger areolæ extend forward but about half way to the reflexed portion. Costal area with two rows of very irregular areolæ, these being more irregular than in *plexa*. Tip of the rostrum covered in all the specimens before me but apparently attaining the apex of the metasternum and little if any surpassing it.

Color yellowish or more or less fulvous, the elytra and reflexed portion of the pronotum cinerous-white; head black with the spine-like

carinae white, the surface closely and minutely pale pubescent, omitting a line either side next the lateral carinae; the prominent tylus pale; bucculae large, white, becoming infuscated at apex. Antennae and legs fulvotestaceous, the fourth antennal segment black on its apical two-thirds. Femora and tibiae with an obscure dark median cloud, tarsi fuscous. Rostrum pale, darker at apex. Pronotum deeper fulvous on its disk, paler anteriorly and posteriorly, marked with fuscous in the anterior impressions; carinae white, the median marked with black on the crest and near the tip, the lateral with a fuscous mark behind, the middle and sometimes another on the crest. Closed elytra with a common large, nearly round, brown cloud on their disk, darker anteriorly; the veins on the reflexed sides of the pronotum, on the costal area and on the apex of the sutural area and membrane mostly fuscous or black, the disk of the membrane with a few vermiculate fuscous lines; extreme base of the discoidal area infuscated. Beneath with a fuscous longitudinal vitta on either side, sometimes indistinct.

Described from five females taken by me with their young on the margins of Clear Lake in Lake Co., August 3, 1916; one taken by me at Lakeside, San Diego Co., October 2, 1913, and four taken by Mr. Giffard in San Joaquin Co., May 25, 1917.

Holotype (No. 332), female, from Lake Co., in collection of the California Academy of Sciences.

Allotype (No. 333), from San Joaquin Co., in collection of the California Academy of Sciences.

Paratypes in collections of the California Academy of Sciences, of Mr. W. M. Giffard and of the author.

Our four North American species of this genus may be distinguished as follows:

- | | |
|--|------------------------------|
| Costal area of the elytra with two complete series of areolae..... | 1 |
| Costal area of the elytra with three complete series of areolae..... | 2 |
| 1. Color brown, obscurely veined with fuscous, the reflexed portions of the pronotum infuscated; inhabits eastern states..... | <i>plexa</i> (Say). |
| - Color cinerous varied with fuscous, the disk of the pronotum and beneath fulvous or pale ferruginous; inhabits western states..... | <i>ornata</i> , new species. |
| 2. Color nearly uniform ferruginous-brown, rostrum not surpassing the mesosternum..... | <i>brevisrostris</i> O. & D. |
| - Color cinerous varied with fuscous; rostrum attaining the hind margin of the metasternum..... | <i>variegata</i> Pshly. |

66. *Leptoypa minor* McAtee? One example taken by Mr. Giffard at Witter Springs differs from McAtee's description in being larger, 2.4 mm., in having the third antennal segment paler, especially at apex, not "infuscated" as indicated by McAtee, and in a different infuscation of the upper surface, the latter character probably of little or no significance.

Stål, in his key to the American genera of the Tingitidæ, has included this genus and its allies with uniseriate costal membrane in the section with bi- or tri-seriate membranes.

67. *Teleonemia nigrina* Champ. Crystal Springs, San Mateo Co., June 25, 1916; Muir Woods, July 15, 1917; Mt. Diablo, 3800 feet elevation, July 23, 1916; Wawona, June 16, 1916. A common species everywhere in California. Some of the females taken in company with the typical form have mere tubercles on the last ventral segment in place of the prominent horn-like processes pictured by Champion.

68. *Monanthia labecula* Uhl. Near Cloverdale, Sonoma Co., August 3, 1916. This is a true *Monanthia*, very near to *lupuli* Fieb.

69. *Phymata severina* Handl. Borders of Clear Lake and Laurel Dell, Lake Co., August 2, 1916, on alfalfa.

70. *Apiomerus crassipes* (Fabr.) Santa Barbara, one example. A common species.

71. *Rhynocoris ventralis* var. *femoralis* Van D. Redwood Canyon, July 2, 1916.

72. *Pselliopus spinicollis* (Champ.) Placer Co., 4500 feet, August 20, 1916.

73. *Sinea diadema* (Fabr.) Near Clear Lake, Lake Co., August 2, 1916.

74. *Nabis ferus* (Linn). Niles Canyon, July 24, 1916; Hoberg's Resort, August 2, 1916; Yosemite, June 16, 1916; Fallen Leaf Lake, August 21, 1916; Tallac, August 22, 1916; Tahoe, August 23, 1916; Portland, Oreg., July 5, 1917; Ashland, Oreg., July 10, 1917.

75. *Nabis roscipennis* Reut. Portland, Oreg., July 5, 1917.

76. *Anthocoris melanocerus* Reut. Summit, 7000 feet, August 24, 1916. I have examples of this species from Colorado, Utah and British Columbia.

77. *Anthocoris albiger* Reut. Redwood Canyon, August 6, 1916; Hoberg's Resort, August 2, 1916; Yosemite, June 16, 1916; Wawona, June 17, 1916; Placer Co., 4500 feet, August 20, 1916.

78. *Anthocoris bakeri* (Popp). Near Cloverdale, Sonoma Co., August 3, 1916; Hoberg's Resort, August 2, 1916. These belong to the strongly colored form described by me as *ornatus*.

79. *Anthocoris antevolens* Wht. Taken everywhere on willows from tide water to 7000 feet in the Sierra.

80. *Melanocoris obovatus* Champ. Summit, Placer Co., 7000 feet, August 24, 1916. The single specimen taken by Mr. Giffard differs from Champion's description, in having the elytra, the costa excepted, dark brown rather than black, and the second antennal segment and tibiae scarcely paler.

81. *Triphleps tricolor* Wht. Niles Canyon, May 24 and July 24, 1916; Los Altos, July 26, 1916; Redwood Canyon, July 2, 1916; Mt. Diablo Park, July 23, 1916. Common everywhere in California.

82. *Stenodema vicinum* (Prov.) Fallen Leaf Lake, August 21, 1916; Portland, Oreg., July 3, 1917. These are of the green form; nymphs only were taken at Fallen Leaf Lake.

83. *Trigonotylus ruficornis* (Fall). Seattle, Wash., July 7, 1917.

84. *Trigonotylus breviceps* Jak. San Mateo Co., June 17, 1917; Tahoe City, August 23, 1916. This species is common throughout California in suitable locations.

85. *Platytylhellus intercidendus* (Dist.) Muir Woods, July 15, 1917, one example with the sides of the scutellum black and the anterior margin and median line of the pronotum red.

86. *Platytylhellus bivittis* (Stål). San Mateo Co., June 17, 1917; Yosemite, June, 1916.

87. *Phytocoris canescens* Reut. San Francisco, June, 1916; Redwood Canyon, July, 1916; Monterey Co., June 10, 1917; Placer Co., 6000 feet, August 22, 1916.

88. *Phytocoris eximius* Reut. Redwood Canyon, August, 1916; Santa Clara Co., July, 1916; Walnut Creek, August, 1916; Mt. Diablo, July, 1916; Lakeport, August 2, 1916; Hamilton Station, Tuolumne Co., June 19, 1916; Summit, 7000 feet, August 24, 1916.

89. *Phytocoris jucundus* Van D. Fallen Leaf Lake, August 21, 1916; Placer Co., August 20, 1916.

90. *Phytocoris cunealis* Van D. Niles Canyon, June 18, 1916; Mt. Diablo, July, 1916; Yosemite, July, 1916; Placer Co., August 20, 1916.

91. *Phytocoris vinaceus*, new species

Aspect of *rufus*, but much larger and proportionately more slender; smaller and broader than *rosceus*; deep wine red, eyes, membrane and sometimes the hind margin of the pronotum black or nearly so, the antennæ faintly banded with pale. Length to tip of membrane 5 mm.

Head nearly vertical, face flattened above where the longitudinal furrow is distinct, below prominently convex; clypeus and lower cheeks also prominent. Antennæ slender, as long as the body; first segment nearly linear, as long as the width of the pronotum; second not quite twice as long as the first and about half as thick; third still more slender and about two-thirds the length of the second; fourth about two-thirds the length of the third. Pronotum longer than in *rufus*, twice as wide as long, sides a little concave, callosities prominent. Elytra parallel, the abdomen reaching the middle of the cuneus in the male, nearly to its tip in the female; surface moderately polished, sparsely clothed with very short fuscous hairs. Rostrum passing the middle of the abdomen. Legs about as in *tibialis*.

Color a nearly uniform dark wine red, sometimes a little paler beneath, on the anterior disk of the pronotum and on the cuneus, the pronotum usually shading to fuscous or almost black at the hind margin, which is very slenderly paler. Membrane nearly black, immaculate, the nervures mostly red. Abdomen more or less infuscated in the male and in the region of the oviduct in the female. Femora sometimes darker toward their apex, and, with the tibiæ, faintly dotted with pale; tibial bristles pale and little longer than the thickness of the joint. First segment of the antennæ sparsely dotted with pale, the pale bristles a little longer than the thickness of the segment; second and third segments with a narrow whitish annulus at base and a broader one just beyond their middle; these segments and the fourth sometimes infuscated.

Described from five examples taken by me at Hoberg's Resort, August 2, 1916, and four taken by Mr. Giffard the next day near the road to Lakeport, all on manzanita. Mr. Giffard also took this species from manzanita in Sonoma Valley on August 3, 1916, and again in Placer Co. and at Tahoe at an altitude of 3900 feet. Mr. Fordyce Grinnell has sent me one example taken by him at Pasadena, June 5, 1910. At Hoberg's Resort we found the young in abundance, but few had then reached maturity.

Holotype (No. 334), male, from Hoberg's, in collection of the California Academy of Sciences.

Allotype (No. 335), female, from Hoberg's, in collection of the California Academy of Sciences.

Paratypes, in the collection of the California Academy of Sciences and those of Mr. Giffard and the author.

92. *Adelphocoris superbus borealis*, new variety

Similar to the species and apparently a color variety. Black; pronotum and broad costal margin red or yellowish red, the posterior disk of the pronotum with a black transverse band or two spots; narrow base of

the second antennal segment pale. In one example the callosities are black and another has the pronotum entirely red and the black vitta on the elytra so reduced that it covers only a portion of the clavus and a small spot on the inner angle of the corium.

Described from two male and two female examples taken by Mr. Giffard at Seattle, Wash., July 7, 1917. I would be inclined to consider this a deeply colored form of *rapidus* were it not that the rostrum reaches only to the apex of the middle coxæ instead of past the posterior. In three examples the tip of the cuneus is black. It is possible that both this and *superbus* are geographical races or subspecies of *rapidus*.

Holotype (No. 336), male, in collection of the California Academy of Sciences.

Allotype and paratypes, in collection of Mr. W. M. Giffard.

93. *Stenotus binotatus* (Fabr.). Portland, Oreg., July 5, 1917, apparently common.

94. *Irbisia sericans* (Stål). Portola Valley, San Mateo Co., May 5, 1917; Santa Cruz Co., 600 feet, June 9, 1917; Dublin Canyon, May 6, 1917.

A variety with red legs was taken by Mr. Giffard on the Tunnel Road in Alameda Co., May 13, 1917; in Dublin Canyon, May 6, 1917; Contra Costa Co., June 14, 1917; at Crystal Springs, San Mateo Co., June, 1916, and in Santa Cruz Co., June 7-9, 1917. This form may be called variety *mollipes*. Holotype (No. 337), in collection of the California Academy of Sciences; allotype and paratypes, in collection of Mr. Giffard and of the California Academy of Sciences.

95. *Thyrillus pacificus* (Uhl.) Niles Canyon, May 26, 1916; May 25, 1917; April 15, 1917; Contra Costa Co., June 14, 1917.

96. *Poeciloscytus unifasciatus* (Fabr.) Santa Cruz Co., June 17, 1917.

97. *Poeciloscytus uhleri* (Van D.) Redwood Canyon, July, 1916.

98. *Dichrooscytus suspectus* Reut. Tahoe City, August 23, 1916.

99. *Dichrooscytus irroratus* (Van D.) Tallac, August 22, 1916.

100. *Platylygus luridus* (Reut.). Wawona, June 17, 1916. Placer Co., August 20, 1916; Tallac, August 22, 1916; Donner Lake, August 24, 1916.

101. *Lygus sallei* Stål. San Francisco, June 18, 1917. and July and August, 1916; San Mateo Co., June 20, 1917; Los Altos, July, 1916; Portola Valley, May 4, 1917; Santa Cruz Co., June 8-10, 1917; Monterey Co., June 11, 1917; Niles Canyon, July and September, 1916. Everywhere common on *Baccharis*.

102. *Lygus convexicollis* (Reut.) Fallen Leaf Lake, August 21, 1916; Tahoe City, August 23, 1917; Placer Co., 6000 feet, August 22, 1916; Soda Springs, Placer Co., August 24, 1916; Summit, August 24, 1916.

103. *Lygus pratensis* (Linn). Los Altos, July, 1916; Mt. Diablo Park, July 23, 1916; Tahoe City, August 23, 1916; Tallac, August 23, 1916.

104. *Lygus pratensis* var. *rubidus* Knight. Muir Woods, July 15, 1917; Portland, Oreg., July 3, 1917.

105. *Lygus elisus* Van D. San Joaquin Co., May 25, 30, 31, 1917.

106. *Lygus elisus* var. *hesperius* Knight. Crystal Springs, June 25, 1916; Los Altos, July, 1916; Santa Cruz Co., June 7, 1917; Niles Canyon, July, 1916; Redwood Canyon, July, 1916; Walnut Creek, August 10, 1916; Laurel Dell, Lake Co., August 2, 1916. Next to *sallei* this is the most abundant form of the genus about the Bay region.

107. *Lygus elisus* var. *viridiscutatus* Knight. Another common form found everywhere about the bay region from May to August and as far north as Blue Lakes in Lake Co.

108. *Lygus nubilus* Van D. Los Altos, July, 1916; Portland, Oreg., July 3, 1917.

109. *Lygus nubiliatus* Knight. Redwood Canyon, August, 1916.

110. *Lygus campestris* (Linn). San Francisco, July 13, 1917; Santa Cruz Co., June 9, 1917; Fallen Leaf Lake, August 21, 1916; Soda Springs, Placer Co., August 24, 1916.

111. *Lygus?* *brachycerus* (Uhl.) Crystal Springs, June 25, 1916; Portola Valley, May 4, 23, 1917; Niles Canyon, May, 1916; May 23, 1917; Dublin Canyon, May 26, 1917;

Contra Costa Co., June 14, 1917; Santa Cruz Co., June 7, 1917. The puncturation on the pronotum of this and the following species is sufficient to throw them out of genus *Irbisia* and their low cheeks and simple antennæ exclude them from *Capsus*. They possess all the essential characters of *Lygus* and it seems best to place them here, for the present at least.

112. *Lygus?* *solani* (Heid.) With the preceding of which this is probably but a dimorphic form.

113. *Lygus distinguendus* var. *tahocnsis* Knight. Summit, Placer Co., July, 1907, one example.

114. *Lygus nigropallidus* Knight. San Francisco, April 18, 1917; June 25, 1916; July 13, 1917; Monterey Co., June 10, 1917.

115. *Lygus acrogenosus* Knight. Wawona, June 17, 1916. 1916.

116. *Cimatlan pusillum* (Uhl.) Placer Co., August 20, 1916.

117. *Camptobrochis validus* Reut. Walnut Creek, August 10, 1916; Wawona, August 17, 1916; Yosemite, June, 1916; Fallen Leaf Lake, August 21, 1916; Placer Co., 6000 feet, August 22, 1916; Tahoe City, August 23, 1916; Donner Lake, August 24, 1916. Common and widely distributed in California, especially through the mountains.

118. *Camptobrochis brevis* Uhl. Donner Lake, August 24, 1916. A small black species with hyaline membrane and fulvous legs.

119. *Camptobrochis cerachates* (Uhl.) Santa Cruz Co., 600 feet, June 9, 1917; Niles Canyon, May, 1916. This species is larger and has more nearly parallel elytra than any of our other forms.

120. *Camptobrochis fenestratus*, new species.

Form of *fulgidus*; yellowish testaceous, more or less tinged with carneous, punctured and marked with black; cuneus black with the basal half conspicuously pale. Length to tip of membrane $6\frac{1}{2}$ -7 mm.

Body above polished; legs and antennæ normal, clothed with erect pale hairs, which are less conspicuous than in *fulvescens* and are easily rubbed off. Vertex to the insertion of the antennæ nearly square, moderately convex; apex of the head obtuse as in *fulvescens* with the tip of the cheeks but little prominent. Pronotum strongly convex and narrowed before; sides feebly sinuated and slenderly carinated; surface with coarse

and rather distant punctures; hind edge subangularly sinuated. Elytra strongly convex, coarsely, deeply punctate; embolium broad at base but soon becoming confused with the swollen posterior disk. Scutellum strongly convex, polished. Sinistral genital hook of the male with a long distal horn.

Color yellowish testaceous, sometimes tinged with carneous, clouded with piceous brown and strongly punctured with brown. Face fulvous brown, normally with the base of the vertex, a median line and the clypeus pale, the latter with a geminate brown line on its basal one-half, the sutures of the cheeks slenderly piceous. Pronotum with the collum broad and strongly arcuate, polished; a large spot on the callosities and sometimes the disk posteriorly black; hind edge slenderly pale, the median line more or less distinctly pale. Scutellum polished black, the basal angles, apex and median line usually pale. Elytra with a spot at base, a large one on the middle and the apex broadly piceous. These marks or at least the basal may become obsolete or almost confluent. Cuneus pale or carneous, the immediate base and broad apex black. Membrane fuliginous, darker at base, with a faintly paler spot at tip of the cuneus, which may become a transverse band. Beneath more or less sanguineous, paler on the coxæ and often becoming piceous on the abdomen, the sides of the venter in pale examples being marked with a row of piceous spots. Antennæ pale, the thickened apex of the second segment black and there may be a dusky annulus near the base of this segment. Legs pale, the hind femora with a broad sanguineous or piceous annulus before its apex; tibiæ triannulate with brown, the basal band often obsolete.

Described from a good series of both sexes taken by Mr. Giffard at Fallen Leaf Lake, August 21, 1916, and Donner Lake, August 24, 1916. Three individuals taken near Clear Lake, Lake Co., August 2, 1916, are a little larger, paler and more sanguineous with the membrane paler, leaving the nervures brown, becoming black at apex. These individuals may be slightly immature. The pale fenestrate base of the cuneus will distinguish this form.

Holotype (No. 338), male, from Fallen Leaf Lake, in collection of the California Academy of Sciences.

Allotype in the collection of Mr. Giffard.

Paratypes in the collection of the California Academy of Sciences, and in those of Mr. Giffard and of the author.

121. *Camptobrochis fulvescens* Reut. Los Altos, July 26, 1916; Walnut Creek, August 10, 1916.

122. *Camptobrochis grandis* Uhl. Tallac, August 22, 1916; Soda Springs, Placer Co., August 24, 1916; Summit, Placer Co., August 24, 1916; Donner Lake, August 24, 1916. This has a closer and finer puncturation than our allied western forms. It may be distinguished from the eastern *nitens* by the dark, annulated antennæ and legs and the fuscous apex of the membrane. Our specimens differ from the eastern ex-

amples of this species in my collection in having the sinistral genital hooks of the male with but a short spine or tubercle at its outer angle in place of the long horn found in my eastern examples but I do not feel like separating it on this character alone as it is a character subject to much variation in all our species, even among specimens from the same locality.

123. *Deraeocoris fraternus* Van D. Donner Lake, August 24, 1916, one example.

124. *Largidea grossa* Van D. Placer Co., August 20, 1916, one example.

125. *Dicyphus californicus* (Stål). Redwood Canyon, July 2, 1916; Crystal Springs, San Mateo Co., June 25, 1916; Los Altos, July 26, 1916; Santa Cruz Co., June 10, 1917. Common everywhere on tarweed.

126. *Dicyphus rufescens*, new species

Allied to *californicus* but more reddish in color, with the basal margin of the pronotum less deeply excavated and the elytra marked with a subcostal brown line and two black spots at apex. Length 4-5 mm.

Head as in *californicus*. Pronotum with the humeri less prominent and the hind margin but feebly excavated before the scutellum. Elytra about as in the allied species. Antennæ a little longer; second segment as long as from the tip of the head to the incised line on the scutellum; third considerably longer than the second; fourth short, one-third longer than the first. Rostrum reaching to between the intermediate coxæ.

Color sanguineous or black. Head and pronotum black, polished; scutellum and abdomen sanguineous to piceous. Elytra yellowish-subhyaline, in certain lights showing a deep purple reflection from the wings beneath; costal nervure slenderly brown and against it a slender brown line, widened to its apex and reaching to opposite the tip of the clavus; apex of the corium broadly black, the cuneus more opaque, yellowish white with the broad apex black; a sanguineous line follows the claval suture and is deflexed around the apex of the corium. Membrane slightly enfumed with a deeper shade beyond the areole, the nervures fuscous. Coxæ and legs yellowish, the femora more or less castaneous, and the hind tibiæ nearly black. Antennæ pale yellowish, the first segment and base of the second deep black. Rostrum pale, becoming black at base and apex.

Described from two females taken by Mr. Giffard at Wawona, June 17, 1916, and one female taken by me at Alpine, San Diego Co., June 7, 1913. This latter individual has the pronotum sanguineous with the collum pale and the abdomen sanguineous becoming piceous near the ovipositor.

Holotype (No. 339), female, from Wawona, in collection of the California Academy of Sciences.

Paratypes in the collections of Mr. Giffard and of the author.

127. *Dicyphus elongatus*, new species

Larger and more elongated than *agilis*, with longer antennæ, its basal segment white, black at base. Length $5\frac{1}{2}$ mm.; greatest width across the elytra $1\frac{1}{4}$ mm.

Head longer than in *agilis*, the neck behind the eye equal to the length of the eye when viewed from above. Antennæ reaching to about the apex of the cuneus; first segment about as long as the space between the eyes; second as long as the head and pronotum together; third rather longer than the second; fourth about one-half the third. Pronotum as in *agilis*, longer with the sides more strongly sinuated than in *californicus*. Elytra long and narrow, parallel. Basal segment of the rostrum scarcely surpassing the hind margin of the eyes, in *agilis* attaining the base of the head.

Color black, polished. Head entirely black, the vertex and neck highly polished. Pronotum black, the disk triangularly pale yellowish, this pale mark resting on the hind margin; collum white. Scutellum opaque black, the basal angles of the basal field often pale as are occasionally those of the apical field. Elytra pale yellowish, becoming whitish along the costa and on the cuneus, the disk with metallic reflections from the iridescent wings beneath; apical half of the clavus and inner field of the corium infuscated; apex of the corium with a black vitta which does not quite attain the costa. Membrane hyaline with a broad median longitudinal fuscous vitta, the nervures heavily fuscous except at apex. Rostrum pale, the basal half of the first segment and the apex black. Legs pale yellowish, the posterior femora and sometimes the anterior and intermediate, with a longitudinal row of fuscous points; extreme base of the tibiæ and the apex of the tarsi blackish. Abdomen black in the male, pale yellowish or greenish in the female, becoming black at base and along the sides. Antennæ pale testaceous clothed with a pale pubescence; second segment and base of the third black; first white, black at base.

Described from one male and six female examples taken by Mr. Giffard in Muir Woods, July 15, 1917. The dorsal fuscous vitta on the elytra is sometimes tinged with red, suggesting *californicus*. The longer head and antennæ will distinguish this from both *californicus* and *agilis*. The former is a broader insect with the membrane mostly black and the basal segment of the antennæ and the base of the second black and the elytra red at apex and along the commissure, while *agilis* has the basal antennal segment entirely pale, the tip of the corium with a black mark resting on the costa and extending but little along its apex, and the membrane quite uniformly but lightly enfumed with the areoles hyaline.

Holotype (No. 340), male, in the collection of the California Academy of Sciences.

Allotype, female, in Mr. Giffard's collection.

Paratypes in collections of the California Academy of Sciences, of Mr. Giffard and of the author.

128. *Dicyphus vestitus* Uhl. San Francisco, July, 1916; San Mateo Co., June 25, 1917; Los Altos, July 26, 1916; Santa Cruz Co., June 7, 1917; Oakland, July 10, 1917; Redwood Canyon, August 6, 1917; Walnut Creek, Aug. 10, 1916; Wawona, June 17, 1916; Yosemite, June 16, 1916.

129. *Dicyphus crudus* Van D. Fallen Leaf Lake, August 21, 1916.

130. *Strongylocoris atratus* (Uhl.) San Mateo Co., June 20, 1917; Santa Cruz Co., June 7, 1917; Niles Canyon, May, 1916; Contra Costa Co., June 14, 1917. The series taken by Mr. Giffard exhibits considerable tendency to variation in the color of the legs.

131. *Philophorus clavatus* (Linn.) Near Stockton, May 30, 1917.

132. *Ceratopsus fasciatus* (Uhl.) Placer Co., August 20, 1916; Donner Lake, August 24, 1916.

133. *Ceratopsus fusiformis*, new species

Aspect of *modestus* but smaller with the apical two antennal segments thicker, fusiform; color castaneous to piceous. Length 4 mm.

Head nearly vertical; hind margin of vertex flat or slightly rounded, not sharp as in the *Pilophoraria*, but with the eyes cut off nearly straight behind and in this character approaching that division. Front convex, opaque, with indications of a longitudinal groove and oblique lateral striæ; clypers narrow, prominent, polished and distinct from the front; gula short, horizontal. Antennæ short; first segment scarcely three times as long as thick, not surpassing the tip of the head; second when pressed back about attaining the base of the pronotum, gradually thickened from base to apex where it equals the first in diameter; third and four together about equal to the second and slightly thicker than its apex, fusiform, the third a little longer than the fourth. Pronotum about as in *modestus* but rather more convex posteriorly; its surface scarcely polished, closely, minutely punctate; sides rectilinear. Scutellum and elytra closely and roughly punctate, the latter in the male a little widened posteriorly and very slightly constricted near the base; in the female broader and more constricted. Legs shorter than in *modestus*. Whole upper surface clothed with stiff subappressed fuscous hairs.

Color dull castaneous or piceous; darkest on the head, base of the pronotum, disk of the corium and cuneus; often paler and tinged with testaceous on the clavus. Antennæ piceous, the basal segment paler. Pectus and anterior and intermediate legs often paler or almost testaceous; hind legs piceous, the knees, tip of the tibiæ and the tarsi paler.

Male genitalia complicated as always in this genus; the dextral hook bifurcate from its base, the dorsal branch porrect, slender and acute; the ventral broad, curved downward along the margin of the segment, its apex recurved and bifurcate, the apical spine slender and acute, the sub-apical lateral, broad, flattened at base and very acute at apex; sinistral hook broadly forked from its base, the dorsal branch short, obtuse, the ventral slender and acute, curved upward under the bifurcated apex of the ventral branch of the dextral hook.

Described from two males and four females taken by Mr. Giffard near Cloverdale in Sonoma Co., August 3, 1916; one male and three females taken at Los Altos, July 26, 1916, and two females taken in Placer Co., August 19, 1916, and one male and two females taken by me at Colorado Springs, Colo., July 8, 1902. In the characters of the head and antennæ this species is close to genus *Pamillia* but the form of the pronotum and elytra are those of *Ceratocapsus* where the species should probably be placed. On Mt. Diablo Mr. Giffard took seven females that seem to differ in no respect except color. These are pale castaneous with the elytra, at least at base, more yellowish, the cuneus almost sanguinous and the base of the membrane pale.

Holotype (No. 341), male, from Sonoma Co., in collection of the California Academy of Sciences.

Allotype, female, from Sonoma Co., in collection of Mr. Giffard.

Paratypes in collections of the California Academy of Sciences, of Mr. Giffard and of the author.

134. *Lopidea marginata* Uhl. Redwood Canyon, July 2, 1916; Tuolumne Co., June, 1916.

135. *Lopidea nigridea* Uhl. Redwood Canyon, July 2, 1916; Hamilton Station, Tuolumne Co., June, 1916.

136. *Lopidea aculeata*, new species

Very similar to *robinia* Uhl. with a shorter pronotum, a black lower surface and different male genitalia. Length to tip of membrane $6\frac{1}{2}$ to 7 mm.

Vertex with a linear depression before the slender basal carina, before swollen about as in *robinia*. Antennæ a little shorter than in the allied species; second segment nearly as long as the head, pronotum and scutellum together, considerably longer than the basal width of the pronotum; third one-half the length of the second. Pronotum one-half as long as its basal width, in *robinia* two-thirds as long, angulate transverse depression before the callosities, reaching almost to the inner angle of the eyes, in *robinia* much shorter, with the callosities prominent and rounded within, while in *aculeata* they are more elongated, oblique and less convex toward the median line than in *robinia*; surface posteriorly a little more convex than in the allied species; sides slightly concave with the carinate edge more obtuse. Elytra narrow, the costa but very feebly arcuated; surface almost smooth, obscurely wrinkled on the clavus, clothed as is the pronotum, with scattering short black hairs, which want the black dots at their base.

Dextral hook of the male genitalia broad, ligulate, incurved, pale, broadly rounded or almost truncate at apex; produced just before its dorsal apical angle in a long acute, curved process which is serrated be-

hind and meets an obtuse tooth on the upper lateral margins of the pygofer. Sinistral hook rather broad, curved and following the ventral wall of the pygofer, its apex not disclosed in any specimen before me but apparently obtuse.

Color deep dull black. Venter in clearly marked examples with an elongated fulvous mark against each eye and an indistinct longitudinal median vitta, but generally these markings are more or less obsolete; cheeks sometimes obscure rufous. Pronotum pale yellowish, more or less tinged with fulvous or rufous, including the raised anterior margin; callosities and the area between them black, the disk posteriorly sometimes suffused with blackish. Closed elytra with a broad diffuse commissural vitta which usually fades out on the base of the clavus. Scutellum, membrane, legs, antennæ and lower surface deep black, the disk and sides of the venter sometimes becoming reddish; apex of the dextral genital hook conspicuously pale.

Described from seven males and four females taken by Mr. Giffard at Seattle, Wash., July 7, 1917.

Holotype (No. 342), male, in collection of the California Academy of Sciences.

Allotype, female, in the collection of Mr. Giffard.

Paratypes in both collections and that of the author.

137. *Lopidea ampla*, new species

Closely allied to *aculeata*; larger with more conspicuous black hairs above and with the elytral costa distinctly bowing and different male genitalia. Length 7-7½ mm.

Vertex flattened posteriorly with the basal carina sharp, not reaching the inner angle of the eyes. Antennæ longer and stouter than in *aculeata*; the first segment distinctly longer and thicker; third about two-thirds the length of the second. Pronotum and callosities shaped as in *aculeata*. Elytra wider than in *aculeata*, the costa regularly and distinctly arcuated; width when closed 2 mm. at base and 2½ mm. at widest point; clavus distinctly wrinkled or shagreened, giving the elytra a rougher aspect than in *aculeata*. Whole surface of insect rather closely clothed with stiff black hairs, which spring from punctures that are frequently fuscous or black; these hairs are especially long and thick on the head and pronotum and are much more conspicuous on the elytra than in *aculeata*.

Dextral hook of the male genitalia broad, a little constricted before the rounded depressed apex; this flattened apex is sometimes paler in color and may have its superior angle slightly produced; the tooth-like dorsal projection on the dextral margin of the pygofer is shorter and more obtuse than in *aculeata*. Sinistral hook broad and curved, its apex expanded, bifurcated and somewhat twisted.

Color deep opaque black; posterior one-half of the pronotum, including the depressed sides, and broad costal margin of the elytra, yellowish testaceous; narrow hind edge of the pronotum and sometimes its median line fuscous; hind edge of the ventral segments narrowly whitish.

Described from numerous specimens representing both sexes taken by Mr. Giffard on *Vicia gigantea* at Lands End, San Francisco, July 24, 1917; and a good series from Seattle, Wash., taken July 7, 1917. In my own collection is a male

from Seattle received from Prof. Aldrich labelled *longicornis* Uhler MS. This latter specimen is a little smaller and paler but does not seem to differ otherwise and I would use Uhler's manuscript name for the species were it not inapplicable, as the antennæ in this form is proportionately shorter than in most of our eastern species.

Holotype (No. 343), male, from San Francisco, in collection of the California Academy of Sciences.

Allotype, female, from San Francisco, in collection of Mr. Giffard.

Paratypes in collection of the California Academy of Sciences, and in those of Mr. Giffard and of the author.

138. *Hadronema robusta* Uhl. Tahoe City, August 26, 1916, one example. This specimen has the black spot on the callosities extended back across the disk nearly to the hind margin of the pronotum.

139. *Paraproba pendula* Van D. San Francisco, July, 1916; Muir Woods, July 15, 1917; Crystal Springs, San Mateo Co., June 25, 1916; Santa Cruz Co., 600 feet, June 9, 1917; Niles Canyon, June 13, 1917; Redwood Canyon, August 6, 1916.

140. *Paraproba hamata* Van D. Redwood Canyon, August 6, 1916; Walnut Creek, August 10, 1916.

141. *Paraproba cincta*, new species

Aspect of *pendula*; a little larger, antennæ, outer edge and slender commissural margin of the elytra and the membranal nervures brown. Length $4\frac{1}{2}$ -5 mm.

Head as in *pendula*. Antennæ a little longer; first segment as long as the pronotum and anterior lobe of the scutellum together; second as long as the head, pronotum and scutellum united. Elytra longer than in *pendula*, the tip of the abdomen in the female reaching barely to the middle of the cuneus. Legs longer and more slender than in *pendula*. Male genital characters rather obscure, the ventral surface of the pygofer extended in a rounded lobe.

Color pale yellowish white or greenish. Antennæ soiled yellowish; segments one and two brown or almost black exteriorly and somewhat obscure below; third and fourth segments infuscated. Neck marked with a fuscous point behind each eye, which is scarcely visible through the pronotum, but becomes conspicuous when the head is exerted. Scutellar and commissural margins of the clavus black; beyond this is a very faint cloud recalling that found in *pendula*; extreme tip of the cuneus blackish; nervures of the membrane heavy, brown; a mark on the base of the hind tibiae exteriorly and the tip of the tarsi brown.

Described from one pair taken by Mr. Giffard at Niles Canyon, June 13, 1917, and three females from Crystal Springs, San Mateo Co., taken June 25, 1916. The male and one female want the brown line on the inner margin of the clavus. This form is closely related to *pendula* and might be taken for a pale form of that species, but I believe the characters given are of specific value.

Holotype (No. 344), male, from Niles Canyon, in collection of the California Academy of Sciences.

Allotype, female, from Niles Canyon, in collection of Mr. Giffard.

Paratypes in collections of Mr. Giffard and the author.

142. *Paraproba nigrinervis*, new species

Aspect of *cincta*, more slender and uniformly pale greenish white, eyes black; antennæ, nervures of the membrane and tip of the cuneus fuscous. Length to tip of membrane $4\frac{1}{2}$ mm.

Head more produced and narrowed behind than in *pendula*, with the eyes more prominent, hemispherical in the male; front vertical, the clypeus prominent. Antennæ long and slender, about as long as the entire body to the tip of the membrane; first segment as long as the head viewed from above; second nearly four times the length of the first and about one-half its thickness; third two-thirds the length of the second; fourth a little shorter than the third, the last two setaceous. Rostrum attaining the base of the venter, the first segment passing the base of the head. Pronotum narrow, its basal width hardly more than one-third greater than the length; anterior margin short, about equal to the base of the head; callosities obvious, but not prominent; base of the scutellum well exposed. Elytra long and parallel, a little flaring at apex, the tip of the abdomen about attaining the base of the cuneus in the male. Cuneus very long, about three times its basal width, obtuse at apex. Upper surface sparsely clothed with soft white hairs. Color a tender greenish or yellowish white, the corium and cuneus more deeply tinted with green. Antennæ infuscated, the basal segment almost black; base of the first and second segments paler; nervures of the membrane heavy and fuscous except on their basal third, with the infuscated apex of the cuneus forming a conspicuous transverse black line acutely angled at its middle. Tarsi very slightly infuscated.

Described from twelve examples representing both sexes, taken by Mr. Giffard and myself from grape vines at Laurel Dell on the Blue Lakes, Lake Co., August 3, 1916, a male taken by Mr. Giffard at Niles Canyon, June 13, 1916, and a female taken at Muir Woods in August, 1916. Mr. Giffard also took numbers of this species at Fallen Leaf Lake, August 21, 1916, and at Yosemite in June, 1916. *Diaphnidia provancheri* has somewhat the aspect of this insect but the head is

much shorter behind the eyes, the second antennal segment is more deeply infuscated, not the first, and the membranal veins are pale. In the present species these black membranal veins and the black basal segment of the antennæ are characteristic.

Holotype (No. 345), male, from Laurel Dell, in collection of the California Academy of Sciences.

Allotype, female, from Muir Woods, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

143. *Orthotylus ferox* Van D. Santa Cruz Co., June 7, 1917; Monterey Co., June 10, 1917.

144. *Orthotylus viridicatus* Uhl. Yosemite, June, 1916.

145. *Orthotylus coagulatus* (Uhl.) Niles Canyon, May, 1916; near Stockton, May 31, 1917.

146. *Orthotylus chlorionis* (Say). Fallen Leaf Lake, August 21, 1916; Placer Co., August 24, 1916.

147. *Orthotylus translucens* Tckr. Fallen Leaf Lake, August 21, 1916; Tallac, August 22, 1916.

148. *Orthotylus affinis* Van D. Crystal Springs, San Mateo Co., June 25, 1916; Placer Co., 6000 feet, August 22, 1916.

149. *Orthotylus pullatus* Van D. Crystal Springs, San Mateo Co., June 25, 1916; Niles Canyon, May, 1916.

150. *Mecomma antennata*, new species

Very near *gilvipes* Stål. Antennæ black, excepting the base of the third segment; brachypterous elytra of the female testaceous. Length, male $4\frac{1}{2}$ mm. to tip of the elytra, female $3\frac{1}{2}$ mm. to tip of abdomen.

Body black, polished. Vertex with a round castaneous spot against each eye. Antennæ black; male, second segment as long as from the tip of the head to apex of the scutellum, linear, densely clothed with soft appressed hairs; third nearly as long as the second and similarly clothed, its base narrowly castaneous; fourth little shorter than the first. In the female the second segment is considerably shorter than in the male and strongly clavate, and the third is more broadly pale at base. Sides of the pronotum concavely arcuated in the macropterous male, nearly rectilinear in the brachypterous female. Elytra whitish-testaceous, much exceeding the abdomen in the male and marked with a broad but vague fuscous cloud along the commissure; the apical margin of the cuneus touched with fuscous. Membrane faintly enfumed, with fuscous nervures. In the female the elytra are broad-ovate, reaching the middle of the tergum and testaceous-white in color. Legs pale fulvous with the tarsi dusky, black at apex.

Described from one pair taken by Mr. Giffard in San Mateo Co., June 20, 1916, on the La Honda Road west of

Woodlands, one pair taken in San Francisco, June 13, 1917, and a long series from Muir Woods, July 15, 1917. In this species the antennæ have nearly the form found in *gilvipes* but are colored about as in *ambulans*. It is possible these three will prove to be subspecies of a single form.

Holotype (No. 346), male, from San Mateo Co., in collection of the California Academy of Sciences.

Allotype (No. 347), female, from San Mateo Co., in collection of the California Academy of Sciences.

Paratypes in collection of the California Academy of Sciences, in that of Mr. Giffard and in that of the author.

151. *Labopidea nigripes* Reut. Fallen Leaf Lake, August 21, 1916; Summit, August 24, 1916.

152. *Parthenicus psalliodes* Reut. Los Altos, July 26, 1916.

153. *Parthenicus ruber*, new species

Aspect of a *Psallus*, but separable by the flattened hind femora and the presence of parallel arolia; testaceous irrorate with sanguineous, giving the insect a reddish appearance; membrane maculated. Length $3\frac{1}{2}$ mm.

Head produced below the eyes for a distance equal to the length of the eye. In both sexes the eyes are small and the vertex is broad, about twice the width of the eye when viewed from above; first antennal segment but little surpassing the clypeus in the female, exceeding the clypeus by about one-half its length in the male; second segment as long as from the tip of the head to the apex of the scutellum, a little shorter in the female; third hardly one-half the second; fourth about one-half the third. Eyes distinctly separated from the anterior angles of the pronotum. Sides of the pronotum rectilinear. Abdomen reaching to just beyond the base of the cuneus in the male, to its apex in the female, the costa nearly straight in the male, gently arcuated in the female. Rostrum attaining the middle of the venter.

Color testaceous, more or less tinged with red in most individuals; irrorated with sanguineous or often quite uniformly dull sanguineous, with the sides of the pronotum dusky. Membrane enfumed, the nervure pale, varied with sanguineous; margin with a whitish-hyaline spot next the apex of the cuneus and another a little farther out, the latter often obscure or wanting. Antennæ pale with a sanguineous line around the first segment near its apex and sometimes a reddish tinge near the base. Legs pale, the anterior and intermediate femora obscurely dotted with sanguineous, the posterior more or less infuscated and heavily dotted; all the tibiæ dotted with red or castaneous. Beneath mostly sanguineous with the coxæ pale. Male genital styles long, terete, lying parallel to and near the ventral wall of the pygofer.

Described from numerous individuals taken by Mr. Giffard in Placer Co., August 20, 1916, and one male taken by Dr. J. C. Bradley at Sisson, Calif., August 19, 1908; two males and one female from Mt. Tamalpais, August 16, 1916, and

two males from Santa Cruz Co., June 7, 1917. Those from Mt. Tamalpais are clearly marked and I consider them typical. The dark reddish forms are from the Sierra but they scarcely require a distinct name.

Holotype (No. 348), male, from Mt. Tamalpais, in the collection of the California Academy of Sciences.

Allotype, female, from Mt. Tamalpais, in collection of Mr. Giffard.

Paratypes in both collections and that of the author.

154. *Parthenicus giffardi*, new species

Form and size of *picicollis* nearly; above white, sides of the head and pronotum, a band on the base of the elytra covering the scutellum and the femora dark sanguineous; membrane black. Length 4-4½ mm.

Head small, similar in the two sexes; eyes prominent, bead-like, when viewed from the side oblong and nearly vertical; apex of the head produced before the eyes a distance equal to the width of the eye; line of the face regularly arcuated; vertex about the width of the eye. Basal segment of the antennæ as long as the space between their bases; second little longer than the basal width of the pronotum; third and fourth together nearly as long as the second; fourth about two-thirds the third. Pronotum transverse, much narrowed anteriorly, the sides strongly oblique and rectilinear; surface impunctate, a little roughened anteriorly; callosities obscure. Elytra long, nearly parallel, the abdomen scarcely attaining the fracture in the male, a little surpassing it in the female; surface of the elytra impunctate, moderately polished. Hind femora considerably expanded and flattened.

Color creamy white, clothed above with pale pubescence, which is easily rubbed off; basal segment of the antennæ, sides and lower surface of the head and pronotum, the pectoral pieces, a transverse band on the base of the elytra covering the scutellum, the slender commissural margin beyond the clavus and all the femora sanguineous-brown. Membrane deep fuscous, the nervures touched with sanguineous at apex, where they rest on a pale spot; tibiæ dotted with sanguineous, the spines pale.

Described from four males and two females taken by Mr. Giffard in Redwood Canyon, August 6, 1916, on *Baccarhis*, and one male taken by Dr. J. C. Bradley at Sisson, Calif., August 19, 1908. One male has the elytra quite strongly suffused with fulvous.

Holotype (No. 349), male, from Redwood Canyon, in collection of the California Academy of Sciences.

Allotype, female, from Redwood Canyon, in collection of Mr. Giffard.

Paratypes in both collections and that of the author.

155. *Macrotylus essigi* Van D. Crystal Springs, San Mateo Co., June 25, 1916, abundant with the young on tarweed.

156. *Macrotylus intermedius*, new species

Smaller than *essigi*, more greenish in color and more suffused with blackish. Length $3\frac{1}{2}$ mm.

General characters of *essigi*. Greenish yellow. Head clearer yellow, clypeus narrowly fuscous, the bucculae whitish. Disk of the pronotum infuscated behind the black callosities and marked with fuscous dots at the base of the black hairs with which the surface is clothed and with an obscurely paler median line. Basal area of the scutellum with a yellow mark on either side. Clavus as in *lincolatus*, not entirely black, dotted with fuscous; corium sparsely dotted with black, especially on its posterior disk; costal nervure, a narrow longitudinal median vitta and the hind edge blackish. In *essigi* the corium is yellow with a slender costal line and the broad apex black and the disk with black hairs which do not spring from black dots as they do in *intermedius* and *lincolatus*. Cuneus immaculate except for an obscurely blackish costal line. Membrane as in *essigi*, deeply infuscated, with the nervures yellow and a white mark next to the apex of the cuneus followed by a blackish ray. In *lincolatus* the membrane is less deeply infuscated, leaving the black ray more conspicuous. Legs obscure greenish lineate with fuscous and with the usual pale dots at the apex of the femora as in both allied forms. Antennae black or nearly so, with the base of the second and third segments very narrowly pale.

Described from two male and three female examples taken by Mr. Giffard in San Mateo Co., June 20, 1917. This may prove to be a color variety of *essigi*.

Holotype (No. 350), male, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratypes in both collections.

157. *Macrotylus lincolatus* Uhl. Santa Cruz Co., 1200 feet, June 8, 1917; Tallac, August 22, 1916.

158. *Reuteroscopus falcatus*, new species

Whitish or tinged with fulvous; eyes, clypeus, two spots on the pronotum and a row of marks on the pleurae and sides of the venter black. Length 4 mm.

Head shorter and more vertical than in *ornatus*. Vertex smooth, but slightly convex; clypeus narrow, prominent; facial angle less than a right angle. Antennae about as in *ornatus*: first segment exceeding the clypeus by one-fourth its length; second stout, not thinner than the first, in the male nearly as long as the basal width of the pronotum, in the female shorter; third and fourth together as long as the second; third one-fourth longer than the fourth. Pronotum shorter than in *ornatus*; moderately convex, the anterior angles well rounded, sides regularly arcuated, hind margin very feebly excavated; callosities subcontiguous. Tumid base of the scutellum well exposed; apical lobe almost flat. Elytra oblong, nearly flat, the costa but feebly arcuated; abdomen of the male attaining the apex of the cuneus, of the female reaching to apical one-fourth of the membrane. Genital segment of the male large, convex, occupying two-fifths of the length of the abdomen, moderately compressed but scarcely carinate; the genital characters rather obscure.

Color whitish, tinged with fulvous in the female. Eyes, clypeus, a round spot behind either callosity, which may be so extended as to cover most of the posterior disk of the pronotum, and a large round spot on the propleura; meso- and meta-pleuræ and most of the abdomen in the male fuscous; anterior margin of the meta-pleura and a series of transverse vittæ either side of the venter of the female fuscous or black. Slender scutellar and commissural margins of the clavus fuscous, the sutural margin whitish; male with the inner field of both the clavus and corium infuscated; corium of the female with a longitudinal median fuscous ray and whitish costa. Membrane infuscated with pale nervures; in the female paler with a darker ray behind the areoles. Legs and antennæ whitish, the former immaculate with concolorous bristles.

Described from one male taken by me at Tallac, July 25, 1915, and a female taken by Mr. Giffard in Niles Canyon in May, 1916. This female has a decidedly fulvous tinge and the basal lobe of the scutellum is bright fulvous and it may represent a distinct species. The shorter and more convex pronotum and less produced head make this species aberrant in this genus. It should perhaps go in *Phylus* but the male genital segment certainly is not carinate.

Holotype (No. 351), male, from Tallac, in the collection of the California Academy of Sciences.

Allotype, female, from Alameda Co., in collection of Mr. Giffard.

159. *Psallus pantherinus*, new species

Size and form of *guttulosus* nearly; most closely allied to *sulphureus*; smaller than *guttulosus*, with the membrane irrorate; dots on the upper surface coarser than in either of those species. Length $3\frac{1}{2}$ mm.

Head nearly vertical, shorter than in the allied species, the facial angle but little more than a right angle; vertex between the eyes nearly quadrangular; clypeus rather broad, especially in immature examples; loræ short and broad; cheeks narrow; gula short and horizontal. Rostrum reaching nearly or quite to the base of the venter; first joint just attaining the base of the head. Antennæ rather short; first segment but little surpassing the tip of the clypeus; second about as long as the basal width of the pronotum, in the male cylindrical, as thick as the first; in the female slender; third and fourth slender; third two-fifths the length of the second; fourth three-fourths of the third. Pronotum proportionately shorter and broader than in either of the other species, much shorter than the scutellum, scarcely longer than the head when viewed at right angles to the plane of the latter; its length about two-thirds its basal width; anterior angles well rounded; posterior margin straight, leaving the base of the scutellum broadly exposed; callosities small, scarcely discernible; anterior margin broadly flattened; upper surface rather sparsely clothed with pale hairs.

Color pale greenish white. Face more or less strongly tinged with fulvous and showing a pale basal mark and median longitudinal line. Pronotum, scutellum and elytra irregularly and not very densely dotted with olive or fulvous brown; these dots are coarser than in the allied species and tend to form rings enclosing pale areas; on the pronotum they are

fewer and more yellowish and may be nearly or quite wanting in immature individuals. Membrane closely irrorate with pale brown beyond the areoles, which are faintly clouded with smoky at apex, with the nervures whitish; at the apex of the cuneus is a whitish spot followed by a transverse pale fuscous vitta. Antennæ and legs concolorous, greenish white, the hind femora more or less dotted with brown toward their apex; hind tibiæ with about seven large black points, each carrying a pair of stout black bristles; the anterior and intermediate tibiæ with fewer black bristles and but indistinctly dotted; tarsal claws brown. Venter of the male becoming fulvous or brown along the median line.

Described from two males and six females taken by Mr. Giffard and myself on *Quercus agrifolia* near Cloverdale, Sonoma Co., August 3, 1916, and three males and eight females taken by Mr. Giffard by the road a little north of Hoberg's Resort, Lake Co., August 2, 1916. I also took one example of this species in the Garden of the Gods at Manitou, Colo., July 19, 1900. This species may be distinguished from its allies by the shorter pronotum finely irrorated membrane and the coarse dotting of the elytra.

Holotype (No. 352) and Allotype (No. 353) in collection of the California Academy of Sciences.

Paratypes in collection of the California Academy of Sciences, and in those of Mr. Giffard and of the author.

* 160. *Psallus scriatus* (Reut.) Niles Canyon, July 14, 1916.

161. *Psallus soror*, new species

Closely allied to *juniperi* Heid. but larger and more strongly dotted with sanguineous, nervures of the membrane and the hind tibiæ also dotted. Length to tip of the membrane $3\frac{1}{2}$ -4 mm.

Head longer than in *juniperi*. Vertex broad in the female, in the male narrower than the large prominent eyes. Pronotum normal, the sides very slightly concavely arcuated; callosities obscure. Elytra long and parallel in the male, shorter and a little arcuated in the female. Rostrum reaching nearly or quite to the middle of the venter. Body above clothed with deciduous white hairs, which are longer on the vertex and pronotum.

Color testaceous or yellowish white, irregularly irrorate with sanguineous above and on the sides of the pectus and venter, the cuneus more deeply colored in the male; corium with a cluster of black scale-like deciduous hairs at the apex of the clavus and two similar tufts on the hind margin. Membrane evenly but lightly enfumed, the nervures pale, varied with sanguineous. Antennæ soiled whitish, the first segment slightly marked with sanguineous at base and apex. Legs pale, the coxæ tinged with greenish; femora toward their apex and the tibiæ dotted with sanguineous.

Described from one pair taken by Mr. Giffard near Stockton, May 30, 1917. This insect has much the aspect of *Parthenicus psalliodes* but the absence of free aroliæ will at once

distinguish it from that subfamily. It is very near *Psallus juniperi* but may be distinguished by its larger size, more distinct sanguineous irrorations, and perhaps most readily, by the strongly dotted tibiæ. Like *juniperi* it has an unicolorous membrane.

Holotype (No. 354), male, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

162. *Gerhardiella delicatus* (Uhl.) Niles Canyon, May 23, 1917; June 13, 1917; Portola Valley, San Mateo Co., May 4, 1917; Santa Cruz Co., June 8, 1917; Tahoe City, August 23, 1916.

163. *Plagiognathus mundus*, new species

More polished and clearly marked than *obscurus*; femora black; cuneus black with its margins more or less broadly pale. Length 4.5 mm.

Head more produced than in *obscurus*; when viewed from the side its length below the eye is fully equal to the length of the eye, while in *obscurus* it is distinctly less. Antennæ, pronotum, scutellum and elytra as in the allied species; second antennal segment as long as the basal width of the pronotum; third and fourth slender; third two-thirds the length of the second; fourth one-half the third. Pronotum trapezoidal, much narrowed anteriorly, sides rectilinear; callosities inconspicuous. Elytra almost parallel, a little wider posteriorly, its greatest width in the male at apex of the corium; sides rectilinear in the male, but little arcuated in the female. Rostrum attaining the apex of the hind coxæ.

Color black, polished, marked with pale greenish or yellowish. Vertex with a greenish spot, which is broader than in *obscurus* and often is extended so as to cover much of the surface as in that species. Antennæ black with the apical two segments pale. Pronotum black, only in the palest specimens with the disk posteriorly greenish. Scutellum black, rarely with the posterior field greenish in whole or in part. Elytra black, normally marked as in *obscurus* with a pale area at base which may be extended along the claval suture and discal nervure and very rarely along the costa; tip of the clavus and the commissure beyond usually touched with pale; cuneus black with its margins more or less broadly pale, the black at times reduced to a small median spot or the pale may be reduced to a mere trace on the base and tip. In *obscurus* the apex is black with the base more or less broadly pale. Membrane black; the nervures usually pale, especially at apex, where there may be a pale spot adjoining. Beneath black; hind edge of the propleura, apex of the coxæ and base of the femora greenish. Tibiæ whitish, coarsely dotted with black; tarsi black, the second segment mostly pale, the tips of the femora usually pale. Rostrum black.

Described from numerous examples taken by Mr. Giffard at Niles Canyon, June 13, 1917, and Contra Costa Co., June 14, 1917. This species varies in the extent of its pale markings as does *obscurus* but may be distinguished by the black femora and by its having the cuneus black on its middle and

not at apex. Pale examples may become a clear light fulvous on the pale areas. In dark examples the elytra may be entirely black excepting a touch of pale at base and apex of the cuneus and on the membrane at apex of the areole. In fresh specimens the body is clothed with a pale pubescence. The Niles Canyon specimens have the pale markings more extended than in those from Contra Costa Co. At Portland, Oreg., and Seattle, Wash., Mr. Giffard took a series that show the same variation in color but differ in having the tibiae more or less obscured, sometimes entirely blackish. In teneral examples the hind femora are pale enough to show the black dotting characteristic of the genus.

Holotype (No. 355), male, from Contra Costa Co., in collection of the California Academy of Sciences.

Allotype, female, from Contra Costa Co., in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

164. *Plagiognathus lineatus*, new species

Very near *mundus* but having the elytral costa a little arcuated in both sexes and marked with a pale vitta within the costa and a more slender line on the claval suture. Length 5 mm.

All structural characters in this species seem to be identical with those found in *mundus*, except that the costa is gently arcuated in the male as well as in the female and widest a little before the middle, a character that might come from the shortening of the elytra found in this species.

Color blackish fuscous, clothed with a rather close pale pubescence. Base of the vertex with a transverse pale vitta, which shows no tendency to spread over the vertex in the specimens before me. Pronotum sometimes with a pale area before the callosities and a larger one on the disk behind them. Elytra with a narrow pale vitta on the claval suture, continued on the commissure, and a wider one just within the costa, the latter connecting with the pale on the cuneus. Membrane deeply infuscated with the nervures pale and with a whitish spot against the apex of the cuneus, covering much of the smaller areole. Coxæ in great part and often the base of the femora pale. Legs black with pale knees, in some examples with the tibiae more or less distinctly pale and marked with black dots.

Described from five male and two female examples taken by Mr. Giffard at Portland and Seattle, July 3-7, 1917. The females are slightly immature indicating that the season was still early for this species.

Holotype (No. 356), male, from Portland, in collection of the California Academy of Sciences.

Allotype and paratypes in collection of Mr. Giffard.

165. *Plagiognathus diversus*, new species

Allied to *politus*; black, anterior and intermediate femora pale; tibiæ strongly dotted; corium often pale at base; base of cuneus broadly white. Length $3\frac{1}{2}$ - $4\frac{1}{2}$ mm.

Head broad and short, projecting beyond the eye for less than the length of the eye. Vertex distinctly convex, its base apparently angled, this angle fitting into a shallow emargination of the pronotum; facial angle almost a right angle. Pronotum transverse, a little longer, with the rectilinear sides more oblique in the male. Elytra subopaque; long and nearly parallel in the male, the abdomen attaining the middle of the cuneus; shorter and more ovate in the female, with the abdomen reaching to beyond the tip of the cuneus. Rostrum reaching to the apex of the intermediate coxæ. Hind femora broad, especially in the female.

Color black; base of the vertex with an oval pale spot against each eye, sometimes almost obsolete; third and fourth antennal segments and apex of the second pale. Pronotum sometimes touched with pale posteriorly; clavus at times pale at base; corium usually in the female, sometimes in the male, with a pale area which may be extended down the claval suture and along the costa, the commissural nervure pale beyond the tip of the clavus. Base of the cuneus with a broad whitish lunule, its apical margin sometimes touched with pale. Membrane blackish, obscurely edged with pale at base, especially at apex of the cuneus, the nervures concolorous, becoming pale at apex. Beneath black, the coxæ pale beyond their base. Anterior and often the intermediate femora pale; hind femora black; all the tibiæ white dotted with black and armed with black spines. Tarsi black on apical one-half, obscurely pale at base. Rostrum pale at base. In fresh examples the superior surface is clothed with a pale pubescence.

Described from numerous examples taken by Mr. Giffard at Niles Canyon, June 13-17, 1917; Santa Cruz Co., June 7, 1917, and from near Stockton, May 30, 1917.

The long parallel black elytra ornamented with a white lunule on the cuneus gives the male quite a different aspect from the shorter and paler female.

Holotype (No. 357), male, from Niles Canyon, in collection of the California Academy of Sciences.

Allotype, female, from Niles Canyon, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

166. *Plagiognathus diversus cruralis*, new variety

Differs from the species in having the legs darkened so the anterior and intermediate femora are black or nearly so and the tibiæ are fuscous or black, thus obliterating the black points. The pale points on the vertex are scarcely discernible and the antennæ are almost entirely black. One structural difference appears here: the second segment of the antennæ is distinctly thicker than in the species, but in all other characters the forms intergrade and it does not seem advisable to establish this as a new species.

Described from four males and four females taken by Mr. Giffard at Niles Canyon, May 23, 1917; on the Tunnel Road near Oakland, May 13, 1917; in Santa Cruz Co., June 7, 1917, and near Stockton, May 30, 1917.

Holotype (No. 358), male, from Tunnel Road, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

167. *Plagiognathus diversus pluto*, new variety

Here the pale color has entirely disappeared, except on the apex of the coxæ and base of the femora. The elytra, including the cuneus, are entirely black, excepting that the slender base of the membrane and a spot on the apex of the areoles is whitish. The second antennal segment here is as slender as in the species.

Described from two male and three female examples taken by Mr. Giffard in Santa Cruz Co., June 7, 1917.

Holotype (No. 359), male, in collection of the California Academy of Sciences.

Allotype, female, and paratypes in collection of Mr. Giffard.

168. *Plagiognathus confusus* Reut. Santa Cruz Co., June 14, 1917.

169. *Microphylellus bicinctus* (Van D.) Redwood Canyon, August 6, 1916; Portola Valley, San Mateo Co., May 14, 1917.

170. *Atractotomus hesperius* Reut. Fallen Leaf Lake, August 21, 1916.

171. *Excentricus californicus*, new species

Smaller than the European species; black, above clothed with white scale-like hairs and pale pubescence; basal two segments of antennæ much thickened in the female. Length 3 mm.

Female: Head long, subrostrate, but moderately deflexed or sub-portal. Vertex but gently arcuated, its base ecarinate. Clypeus narrow, prominent, bent so its apex becomes nearly vertical, but little exceeding the cheeks, its basal suture distinct, a little anterior to the insertion of the antennæ; facial angle almost a right angle; gula nearly horizontal. Antennæ stout; basal segment strongly clavate, its apical thickness nearly one-half its length, exceeding the clypeus by one-fourth its length; second segment fusiform about as long as the basal, as thick at its middle as the diameter of the eye viewed from before; both these segments clothed with fine appressed black hairs; third and fourth very slender, together as long as the second; third a little longer than the fourth. Pronotum trapezoidal, its margins nearly rectilinear, the sides curving a little to the

anterior angles which nearly attain the outer line of the eyes; callosities hardly distinguished. Elytra somewhat expanded apically, the cuneus short with a deep fracture. Membrane short, but little exceeding the abdomen with a distinct notch at apex of the cuneus. Hind femora moderately incrassate; third segment of hind tarsi subequal to the second, the first shorter; claws small, strongly incurved; arolia apparently wanting.

Color piceous black; cuneal fracture and narrow apex whitish; apical two antennal segments, rostrum, except at apex, apical two-thirds of tibiae and the basal two segments of the tarsi testaceous; tibial spines and a dot at their base black. Eyes brown. Upper surface and pleurae clothed with pale pubescence and intermixed deciduous thicker white hairs. Membrane fuscous, with a pale lunule at the apex of the cuneus and a large pale spot on its middle, spreading more or less over the basal field; the nervures heavy, fuscous.

Described from two females taken by Mr. Giffard in Placer Co., at 6000 feet, August 20, 1916.

The form of the female antennæ and the less produced head exclude this species from *Criocoris* while from *Atractotomus* it may be distinguished by the thickened basal segment of the antennæ and the form of the head and pronotum. It seems to be near the European *Excentricus punctipes* but is much smaller and apparently has no black hairs among the pale ones on the upper surface.

Holotype (No. 360), female, in collection of the California Academy of Sciences.

Paratype, female, in collection of Mr. Giffard.

172. *Chlamydatus uniformis* (Uhl.) Hamilton Station, Tuolumne Co., June, 1916.

173. *Chlamydatus associatus* (Uhl.) Soda Springs, Placer Co., August 24, 1916.

174. *Europiella decolor* (Uhl.) Redwood Canyon, July 2, 1916; near Stockton, May 30, 1917; Donner Lake, August 24, 1916.

175. *Maurodactylus semiustus* Van D. Mt. Diablo, 3800 feet, July 23, 1916.

176. *Gerris remigis* (Say.) Niles Canyon, September 2, 1916.

177. *Microvelia americana* (Uhl.) Niles Canyon, September 2, 1916.

178. *Saldula explanata* (Uhl.) San Mateo Co., June 17, 1917; Placer Co., August 20, 1916.

179. *Saldula interstitialis* (Say). San Mateo Co., June 17, 1917.

180. *Saldula dispersa* (Uhl.) Niles Canyon, September 2, 1916.
181. *Micracanthia pusilla* Van D. Placer Co., August 20, 1916.
182. *Lethocerus angustipes* (Mayr). Sacramento, August 19, 1916.
183. *Abedus macronyx* Mayr. Niles Canyon, July 11, 1916; September 2, 1916, young.
184. *Gelastocoris variegatus* (Guer.) Niles Canyon, September 2, 1916.
185. *Platypedia arcolata intermedia* Van D. Santa Cruz Co., June 7, 1917.
186. *Aphrophora angulata* Ball. San Francisco, July, 1916; Los Altos, July 26, 1916; Muir Woods, July 7, 1917.
187. *Aphrophora permutata* Uhl. Niles Canyon, May, 1916; Santa Clara Co., June 11, 1917; Wawona, June 17, 1916; Tallac, August 22, 1916; Tahoe City, 6000 feet, August 23, 1916; Donner Lake, August 24, 1916; Portland, Oreg., July 5, 1917; Seattle, Wash., July 7, 1917. Young at Yosemite in June.
188. *Philænus leucophthalmus pallidus* (Zett). Seattle, Wash., July 7, 1917.
189. *Clastoptera lineatocollis* Stål. Fallen Leaf Lake, August 21, 1916; Donner Lake, August 24, 1916, on sage.
190. *Clastoptera lineatocollis binotata* Ball. Fallen Leaf Lake, August 21, 1916; Donner Lake, August 24, 1916; Tallac, August 22, 1916. This is the black form of *lineatocollis* and is usually found on sage brush in company with the species.
191. *Ceresa albidosparsa* Stål. San Francisco, June 25, 1916; Crystal Springs, San Mateo Co., June 25, 1916; Los Altos, July 26, 1916; Niles Canyon, May, 1916; Contra Costa Co., June 14, 1917; Walnut Creek, August 10, 1916; near Stockton, May 25, 1917; near Cloverdale, Sonoma Co., August 3, 1916.
192. *Stictocephala pacifica* Van D. Crystal Springs, San Mateo Co., June 25, 1916; Niles Canyon, May, 1916; Mt. Diablo Park, July 23, 1916; Contra Costa Co., June 14, 1917; Hoberg's Resort and Blue Lakes, Lake Co., August 2, 1916; Hamilton Station, Tuolumne Co., June, 1916.

193. *Stictocephala wickhami* Van D. Fallen Leaf Lake, August 21, 1916; Tallac, August 22, 1916; Tahoe City, August 23, 1916; Summit, Placer Co., August 24, 1916. In California this species seems to be confined to the higher altitudes, while *pacifica* is found mostly along the coast belt.

194. *Stictocephala franciscana* Stål. Portola Valley, San Mateo Co., May 4, 1917; Santa Cruz Co., 1500 feet, June 8, 1917; Niles Canyon, July 24, 1916; near Stockton, May 25, 1917; Laurel Dell, Lake Co., August 2, 1916. This species seems to take the place of *festina* on the alfalfa fields in central and northern California.

195. *Telamonanthe rileyi* (Godg.) San Francisco, June 25, 1916; Los Altos, July 26, 1916; Mt. Tamalpais, August 16, 1916; Walnut Creek, August 10, 1916; Mt. Diablo, 1400 feet, July 23, 1916.

196. *Cyrtolobus vanduzeei* (Godg.) Niles Canyon, May, 1916; Mt. Diablo, July 23, 1916.

197. *Platycotis vittata* (Fabr.) Wawona, June 17, 1916; Placer Co., August 20, 1916. The latter specimens pertain to the unmarked form described as *sagittata* Germ. which, possibly should be regarded as a color variety; both these have the porrect horn. An immature unarmed specimen of var. *quadrivittata* Say was taken at Wawona with the typical form.

198. *Platycotis maritimus*, new species

Intermediate between *vittata* and *minax*, but more closely related to the former; pronotum unarmed in all individuals seen by me; greenish or brownish, more or less varied with darker, median carina black in part. Length to tip of elytra 8 mm.

Head nearly as in *vittata*, the anterior margin more evenly arcuated and distinctly reflexed than in the allied form; surface distinctly wrinkled vertically with prominent percurrent median carina. Pronotum similar to that of *vittata*, with finer, distinct punctures; median carina attaining the anterior margin; cicatrices distinctly smaller and shorter than in *vittata*, beginning abruptly about two-thirds their own length from the median carina and terminating just beyond the inner line of the eyes. In *vittata* they end indefinitely very near the median carina and extend laterally fully to the middle of the eyes; humeri prominent and obtuse; apex usually acute, attaining the middle of the inner apical areole. Elytra hyaline, with strong brown nervures, barely touched with smoky at apex beyond the apical nervure. Last ventral segment of the female deeply roundedly excavated almost to its base; plates of the male subterete, parallel and approximate, reaching distinctly beyond the tumid sides of the pygofers, which in this species are much expanded.

Color about as in *vittata* and exhibiting similar variations; testaceous or yellowish brown, sometimes more or less tinged with greenish; me-

dian carina usually polished black over the dorsum, often interrupted with pale; punctures brown or ferruginous, becoming black on the dark areas; cicatrices and usually a dot above them and the hind angles black; above the humeri is an oblique pale brown vitta often absent, and on the margin beyond the middle is a blackish spot, representing the median vittæ found in *vittata*. Costa and base of the clavus yellow, the former often reduced to a mark on the base of the outer discal areole. Beneath pale testaceous, the tibiæ and tarsi more or less embrowned.

Described from four males taken by me on tan-bark oak in Muir Woods, September 5, 1914, and three males and two females taken by Mr. Giffard at the same locality, August 16, 1916. One male from Departure Bay, Vanc. Isd., August 8, 1913, shows the vittæ found in *vittata* but the lateral are more curved, connecting with the longitudinal vittæ at one end and with the humeral spot at the other. The characters given for this species seem to be constant, but wider collecting may show that it is but a phase of *vittata* inhabiting the fog belt along the coast.

Holotype (No. 361), male, in the collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

199. *Platycotis minax* Godg. Mt. Diablo, 1400 feet, July 23, 1916; near Cloverdale, Sonoma Co., August 3, 1916. Both these individuals belong to the unarmed form described as *asodalis* by Goding.

200. *Philya californiensis* (Godg.) Los Altos, July 26, 1916; Marin Co., July 17, 1917. Taken in large numbers on *Baccharis* by Mr. Giffard.

201. *Koebelia californica* Bak. Soda Springs, Placer Co., August 24, 1916, one darkly colored example.

202. *Parapulopa interrupta* Ball. Portola Valley, May 4, 1917; Dublin Canyon, May 6, 1917.

203. *Parapulopa friscana* Ball. San Francisco, June and July, 1916; July, 1917; Monterey Co., June 11, 1917; Muir Woods, August, 1916.

204. *Parapulopa arborea* Ball. Wawona, June 17, 1916; Placer Co., August 20, 1916; Santa Cruz Co., June 9, 1917.

205. *Agallia novella* Say. Contra Costa Co., June 14, 1917; Yosemite, June, 1916; Seattle, Wash., July 7, 1917; Portland, Oreg., July 3, 1917.

206. *Agallia uhleri* Van D. Niles Canyon, May to July; near Stockton, May 31, 1917; Santa Cruz Co., June 10, 1917; Walnut Creek, August 10, 1916; Laurel Dell, Lake Co., August 2, 1916; Clear Lake, Lake Co., August 2, 1916.

207. *Agallia sanguinolenta* Prov. Crystal Springs, San Mateo Co., June 25, 1916; Mt. Diablo, July 23, 1916; Ashland, Oreg., July 10, 1917.

208. *Agallia californica* Bak. Common everywhere in California from the coast to the High Sierra from May to August.

209. *Agallia lyrata* Bak. Niles Canyon, May 19, 1916; near Stockton, May 30, 1916; Hoberg's Resort, Lake Co., August 2, 1916; Wawona, June, 1916; Yosemite, June, 1916; Placer Co., August 20, 1916.

210. *Idiocerus amoenus* Van D. Alameda, May, 1916; Crystal Springs, San Mateo Co., June 25, 1916; Niles Canyon, September 2, 1916; Walnut Creek, August 10, 1916. Common on willows in the coast region. I have examined a great number of examples from Alameda Co., the type locality for Ball's var. *depictus* and have seen nothing but the typical form and a deeply colored variety which I describe below:

211. *Idiocerus amoenus pictus*, new variety

Differs from the species in being darker in color; vertex and face above marked with brown and irrorate with pale; pronotum and scutellum chestnut brown; elytra smoky with a broad whitish transverse band across the middle of the clavus followed by a band of deeper chestnut brown; oviduct fuscous-brown.

This is the most common form of the species throughout the bay region in spring and early summer, later in the season they become paler or mostly revert to the typical form which was the only form I took in San Diego Co.

Holotype (No. 362), female, from Niles Canyon, in collection of the California Academy of Sciences.

Paratypes in the collection of the California Academy of Sciences, in the collection of Mr. Giffard and in that of the author.

212. *Idiocerus amabilis* Ball. Summit, Placer Co., August 24, 1916, common. This species was described from Vancou-

ver Island but I have taken it at Salamanca, N. Y., in July, and have seen specimens taken at Lake Temagami, Ont., in August. This evidently is a boreal form that follows down the Sierra from British Columbia.

213. *Idiocerus nervatus* Van D. Niles Canyon, May, 1916; Crystal Springs, June 25, 1916. This species is as widely distributed in the west as in the east. Immature individuals are more yellowish and hardly show the dark nervures through the elytra.

214. *Idiocerus verticis* (Say). Niles Canyon, July 24, 1916; Redwood Canyon, August 6, 1916. The identity of this species is in some doubt.

215. *Idiocerus musteus* Ball. San Francisco, July 26, 1916; Niles Canyon, May, 1916; Crystal Springs, San Mateo Co., June 25, 1916.

216. *Idiocerus morosus* Ball. Redwood Canyon, August 6, 1916; Wawona, June, 1916.

217. *Idiocerus verrucosus* Ball. Fallen Leaf Lake, August 21, 1916; Placer Co., 4500 feet, August 20, 1916; Summit, Placer Co., 7000 feet, August 24, 1916. Mr. Giffard seems to have found this species abundant as he brought home long series from these localities.

218. *Idiocerus ensiger* Ball. Summit, Placer Co., August 24, 1916. This species is quite distinct by its fulvous color and the long oviduct of the female.

219. *Idiocerus femoratus* Ball. Donner Lake, August 24, 1916.

220. *Idiocerus snowi* G. & B. Hoberg's Resort, Lake Co., August 2, 1916; Hamilton Station, Tuolumne Co., June 16, 1916; Los Altos, July 26, 1916; Walnut Creek, August 10, 1916. I have found this species well distributed in San Diego Co.

221. *Idiocerus pallidus* Fh. Crystal Springs, San Mateo Co., June 25, 1916; Fallen Leaf Lake, August 21, 1916. I have taken this species at Berkeley, in September and at Clear Lake, Lake Co., August 2, 1916. Our western material agrees in every respect with that taken in the east.

222. *Macropsis occidentalis* Van D. Niles Canyon, May, 1916. Contra Costa Co., May 30, 1917.

223. *Oncopsis californicus*, new species

Allied to *pruni*, but larger, with the median line of the pronotum dark, accentuated by a paler area either side; last ventral segment of the female short, triangular, with an apical notch; elytra hyaline, with heavy fuscous veins, at least in the male. Length 5-5½ mm.

Head regularly rounded, the vertex of equal length across its whole width, and with the disk of the front, strongly punctured. Pronotal rugæ, carrying scattering punctures, more distinct than in *variabilis*, these rugæ more regular and less interrupted than in *pruni*; middle of the vertex, with a longitudinal carina, usually obvious. Elytra with three ante-apical areoles, the outer sometimes broken up in the male, the nervures strong; areoles mostly hyaline, sometimes more or less clouded toward the claval suture in the female. Last ventral segment of the female short-triangular, with a rather deep elliptical or linear notch; oviduct surpassing the pygofers farther than in the allied species.

Color pale testaceous varying to greenish or yellowish, varied with cinerous or fuscous. Base of the vertex with a black dot either side placed a little nearer the eye than to the median line, these dots usually connected by an irregular fuscous band, which in the male may send a median branch to the base of the front. Face with a transverse arcuate black band on the base of the front and sometimes a smaller one at apex, either side with a broad fuscous arc; most individuals also have a black point at each ocellus. Pronotum typically fuscous or black in the male, with a transverse pale area behind the cicatrices vaguely extended to the hind margin either side of a dark median line, the transverse band usually including one or two black points behind each eye. Scutellum blackish, with the basal angles and an oblique line either side of the middle pale, the latter ending in a yellow spot on the basal angles of the apical field. Elytra whitish hyaline, the nervures heavy and fuscous, the commissural twice interrupted with pale. In the female the black becomes brown or cinnamon, with the pale marks much extended and the elytral nervures scarcely infuscated.

Described from a series of both sexes taken by Mr. Giffard near the Tunnel Road east of Berkeley, May 13, 1917, and at Niles Canyon, May 23, 1917.

What seems to be a pale variety of this species is cinnamon-brown with the elytra clouded toward the claval suture, the clavus pale and the nervures scarcely darker. This form was taken at Tahoe, August 23, 1916, and at Niles Canyon in May, 1916, and seems in a measure to connect *californicus* with *variegatus*, which has similar genital characters. Were it not for the very different character of the males, which closely resemble those of *pruni*, they might be considered as races of one species. This form may be distinguished superficially by the dark median line on the pronotum.

Holotype (No. 363), male, from Tunnel Road, in collection of the California Academy of Sciences.

Allotype, female, from Tunnel Road, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

224. *Bythoscopus franciscanus* (Bak.) San Francisco, April 18, 1907; June 25, 1916; July 10, 1916; Los Altos, July 26, 1916; Niles Canyon, July 14, 1916.

225. *Bythoscopus ater* (Bak.) Lakeport, Lake Co., August 2, 1916; Fallen Leaf Lake, August 21, 1916; Donner Lake, August 24, 1916; Summit, August 24, 1916.

226. *Oncometopia lateralis* (Fabr.) Tallac, August 22, 1916; Tahoe City, August 23, 1916; Donner Lake, August 24, 1916.

227. *Cicadella hieroglyphica confluens* (Uhl.) Walnut Creek, August 10, 1916; Mt. Diablo Park, July 23, 1916; near Stockton, May 25, 1917.

228. *Cicadella gothica* (Sign.) Niles Canyon, July 14, 1916; Los Altos, July 26, 1916.

229. *Cicadella circellata* (Bak.) Los Altos, July 26, 1916; Santa Cruz Co., June 7, 1917; Niles Canyon, July 14, 1916; Dublin Canyon, May 6, 1917; Walnut Creek, August 10, 1916; Witter Springs, Lake Co., August 2, 1916.

230. *Helochara communis* Fh. Crystal Springs, San Mateo Co., June 25, 1916; Santa Cruz Co., June 9, 1917; Monterey Co., June 11, 1917; Tahoe City, August 23, 1916; Soda Springs, Placer Co., August 24, 1916.

231. *Draculacephala minor* (Walk.). Crystal Springs, San Mateo Co., June 25, 1916; San Mateo Co., June 17, 1917; Santa Clara Co., June 11, 1917; Los Altos, July 26, 1916; Monterey Co., June 11, 1917; Niles Canyon, May, 1916; September 2, 1916; Clear Lake, Lake Co., August 2, 1916.

232. *Draculacephala crassicornis* Van D. Portland, Oreg., July 3, 1917, one female in which the antennæ are not thickened.

233. *Draculacephala reticulata* Sign. Niles Canyon, July 14, 1916; Redwood Canyon, July 2, 1916; Monterey Co., June 11, 1917.

234. *Pagaronia 13-punctata* Ball. Crystal Springs, San Mateo Co., June 25, 1916; San Mateo Co., hills, June 20,

1917; Santa Cruz Co., July 7, 1917; Monterey Co., June 11, 1917; Muir Woods, July 15, 1917; Niles Canyon, May, 1916.

235. *Pagaronia 13-punctata triunata* Ball. Muir Woods, July 15, 1917; Niles Canyon, May, 1916; Contra Costa Co., June 14, 1917; Dublin Canyon, May 6, 1917; Tunnel Road, near Piedmont, May 13, 1917; Walnut Creek, May 13, 1917.

236. *Bathysmatophorus uhleri* Ball. Portola Valley, San Mateo Co., May 4, 1917; Dublin Canyon, May 6, 1917; Mt. Diablo, July 23, 1916.

237. *Errhomenellus maculatus* (G. & B.) Fallen Leaf Lake, August 21, 1916.

238. *Gypona cana* Burm. Los Altos, July 26, 1916; Sonoma Valley near Cloverdale, August 3, 1916; Mt. Diablo, 1400 feet, July 23, 1916, young.

239. *Gypona angulata* Spangb. San Mateo Co., June 17, 20, 1917; Niles Canyon, July 14, 1916; near Stockton, May 30, 1917; Yosemite, June, 1916.

240. *Xerophlaxa viridis* Fabr. Crystal Springs, San Mateo Co., June 25, 1916; Niles Canyon, May, 1916.

241. *Acucephalus giffardi*, new species

Still smaller than *Xestocephalus pulicarius* and more oblong, not so much widened medially; mottled and transversely banded with black and white. Length $2\frac{1}{2}$ -3 mm.

Head wider than the pronotum, rounded in both diameters in both sexes. Vertex nearly right angled before, the apex subacute; hind margin broadly arcuated, middle line a little elevated, with an oval slightly depressed area either side next the base; surface closely and evenly punctured. Front broad and short, moderately convex, closely minutely punctured; clypeus broad, oblong, its sides very slightly concave, attaining the apex of the cheeks. Pronotum a little shorter than the vertex, distinctly, transversely wrinkled; anterior and posterior margins nearly parallel. Elytra short, oblong, hardly attaining the apex of the abdomen in the female, but little surpassing it in the male; costa gently arcuated, apex rounded.

Hind margins of the last ventral segment of the female parallel with the anterior, broadly subangularly excavated. Pygofers stout, armed with a cluster of stiff bristles at apex. Valve of the male short, broadly angled; plates short and broad, triangular, their sides arcuated at base, then nearly straight to the subacute apex; fringed with short, stiff bristles.

Color black; apex of the head with an oval pale spot enclosing a pair of angular marks and connected along the margin with a pale annulus about the ocelli. Base of vertex with a broad pale band, often tridentate at the middle; basal two-thirds of pronotum white; scutellum with a pale hind border. Elytra with the apex, a broad basal and a post-medial transverse band white; between these bands is a large white costal spot, sometimes more or less merged with the anterior band; the nervures concol-

rous on the alternating bands. Front with a median line, widened at apex, and about six arcs on either side pale; disk of the clypeus and cheeks more or less pale, the temples spotted with black. Knees, tibiae and tarsi pale, the tibiae black within.

Described from seven male and six female examples taken by Mr. Giffard at Soda Springs, Placer Co., August 24, 1916. I place this tiny species in *Acucephalus* on account of the broad head and oblong form, although the female wants the depressed vertex usual in that genus.

Holotype (No. 364), male, in collection of California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

242. *Memnonia simplex*, new species

Female: Aspect of *consobrina*, larger and of an almost uniform pale green. Male more whitish, vertex and pronotum bilineate with fuscous. Length, male 4 mm., female 6 mm.

Head longer than in *consobrina*, subacutely triangular; median length of the vertex twice that next the eye and one-fourth greater than the basal width between the eyes; surface closely but obscurely rastrate-punctate; ocelli placed distinctly superiorly and rather distant from the eyes. Front long, prominent, convex, almost parallel below the eyes to near the apex, then abruptly rounded to the clypeus. Clypeus rather large, convex, regularly narrowing from base to apex. Pronotum short, one-half the length of the vertex; anterior and posterior margins nearly parallel, the latter a little angulate-emarginate; the surfaces transversely wrinkled on the posterior half. Scutellum small, the transverse impressed line distinct. Elytra short, parallel margined, elliptically rounded at apex, reaching to about the base of the apical tergal segment; nervures indistinct, bordered either side by a row of punctures, the venation similar to *consobrina*, there being but one transverse nervure. Wings rudimentary, about half the length of the elytra. Last ventral segment rather long, its apical margin broadly rounded and a little notched at the middle. Color pale green, tinged with yellow on the head, the abdomen more or less fulvous; superior genital segment sometimes marked with black at base; the oviduct brown.

Male more whitish and clothed with a white bloom; vertex and pronotum with two slightly diverging broken fuscous vittae forming two pairs of spots on the vertex. Tergum mostly black; inner surface of the anterior and intermediate tibiae, apex of the tarsi, a spot on either side of the pygofers at base and the tips of the plates black. Elytra in this sex attaining the tip of the abdomen. Valve wanting; plates linear, long, curved upward and somewhat surpassing the anal tube.

Described from one male and seven female examples taken by Mr. Giffard at Lands End and Golden Gate Park, San Francisco, in June and July and in San Mateo Co. in June. Superficially this insect resembles a *Necocoelidia*, but differs in the more triangular head, the superior ocelli, short antennal

setae and rudimentary wings. From *Memnonia* it differs by the narrower and more convex front and more superior ocelli, but seems best placed in the latter genus.

Holotype (No. 365), male, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

243. *Parabolocratus viridis* (Uhl.) Near Stockton, May 25, 1917; Fallen Leaf Lake, August 21, 1916.

244. *Cochlorhinus pluto* Uhl. Santa Cruz Co., June 8, 1917; Niles Canyon, May 23, 1917; Contra Costa Co., June 14, 1917.

245. *Aligia inscripta* (Van D.) Fallen Leaf Lake, 6300 feet, August 21, 1916.

246. *Mesamia coloradensis* (G. & B.). Santa Cruz Co., June 7, 1917; Niles Canyon, May, 1916; Contra Costa Co., June 14, 1917; near Stockton, May 30, 1917. These are darker and more clearly marked than those from Colorado and have the concentric black lines on the edge of the vertex very conspicuous, but they vary much in color and can hardly represent a new species.

247. *Scaphoideus scalaris* Van D. San Francisco, July 18, 1916; Muir Woods, July 15, 1917; Mt. Tamalpais, August 16, 1916; Walnut Creek, August 10, 1916; Laurel Dell, Lake Co., August 2, 1916.

248. *Scaphoideus blandus* Ball. Contra Costa Co., June 14, 1917; Lakeport, 2500 feet, August 2, 1916; near Cloverdale, Sonoma Co., August 3, 1916.

249. *Scaphoideus scrupulosus* Ball. Hamilton Station, Tuolumne Co., June, 1916.

250. *Platymetopius acutus* (Say). Santa Cruz Co., 1200 feet, June 8, 1917; 600 feet, June 9, 1917; Tunnel Road, near Oakland, May 13, 1917; Niles Canyon, June, 1916; May 23, 1917.

251. *Platymetopius acutus dubius* Van D. Los Altos, July 26, 1916; near Cloverdale, Sonoma Co., August 3, 1916; Niles Canyon, May, 1916; June 13, 1917; near Stockton, May 30, 1917; Lake Co., near Lakeport, 2500 feet, August 2, 1916; Ashland, Oreg., July 10, 1917.

252. *Platymetopius nasutus* Van D. Mt. Diablo, 3800 feet, July 23, 1916.

253. *Deltocephalus affinis* G. & B. Redwood Canyon, July 2, 1916; Tunnel Road, near Oakland, May 13, 1917; Portola Valley, San Mateo Co., April 5, 1917; Monterey Co., June 11, 1917; Portland, Oreg., July 3, 1917.

254. *Deltocephalus cinerosus* Van D. San Francisco, April 18, 1917; Santa Cruz Co., 1200 feet, June 3, 1917; Dublin Canyon, May 6, 1917.

255. *Deltocephalus fuscincrvosus* Van D. San Francisco, June 25, 1916; Crystal Springs, San Mateo Co., June 25, 1916; Portola Valley, San Mateo Co., May 4, 1917; Niles Canyon, May to September; near Stockton, May 31, 1917; Wawona, June 17, 1916; Yosemite, June 16, 1916.

256. *Deltocephalus punctatus* O. & B. Common everywhere from the coast up to 8000 feet in the Sierra.

257. *Deltocephalus vanduzci* G. & B. Crystal Springs, San Mateo Co., June 25, 1916; Santa Cruz Co., June 9, 1917; Monterey Co., June 11, 1917; Portola Valley, San Mateo Co., May 4, 1917; Muir Woods, July 15, 1917; Niles Canyon, May, 1916; Dublin Canyon, May 6, 1917; Redwood Canyon, July 2, 1916; Yosemite, June, 1916; Tallac, August 22, 1916; Tahoe City, August 23, 1916; Donner Lake, August 24, 1916; Soda Springs, Placer Co., August 23, 1916; Portland, Oreg., July 3, 1917; Ashland, Oreg., July 10, 1917.

258. *Doratura minuta* (Van D.) San Mateo Co., June 17, 1917; Monterey Co., June 11, 1917; Marin Co., July 15, 1917. Common on a fine grass growing everywhere along the coast just above high tide.

259. *Euscelis exitiosus* (Uhl.) Niles Canyon, July, 1917; San Joaquin Co., May 25, 1917; Clear Lake, Lake Co., August 2, 1916; Placer Co., August 20, 1916; Tahoe City, August 23, 1916; Tallac, August 22, 1916; Donner Lake, August 24, 1916.

260. *Euscelis striolus* (Fall.) Near Stockton, May 31, 1917; Seattle, Oreg., July 7, 1917.

261. *Eutettix subaenea* Van D. Sonoma Valley near Cloverdale, August 3, 1916; Niles Canyon, July 24, 1916.

262. *Eutettix querci* G. & B. Sonoma Valley near Cloverdale, August 3, 1916.

263. *Phlepsius ovatus* Van D. Los Altos, July 26, 1916; Monterey Co., June 15, 1917.

264. *Phlepsius irroratus* (Say). Seattle, Wash., July 7, 1917.

265. *Phlepsius apertus* Van D. Portola Valley, San Mateo Co., May 4, 1917; Los Altos, July 26, 1916; Santa Clara Co., 500 feet, June 9, 1917; Muir Woods, July 19, 1917; near Stockton, May 25, 1917; Contra Costa Co., June 14, 1917; Wawona, June 17, 1916. This species seems to be common and widely distributed through central western California. The material in hand differs in no respect from that taken in New York and Ontario.

266. *Phlepsius occidentalis* Bak. Near Cloverdale, Sonoma Co., August 3, 1916.

267. *Acinopterus acuminatus* Van D. Niles Canyon, June 13, 1917; September 2, 1916; near Clear Lake, Lake Co., August 2, 1916.

268. *Thamnotettix geminata* Van D. San Francisco, April 18, 1917; Portola Valley, San Mateo Co., May 4, 1917; Santa Cruz Co., June 7, 10, 1917; Dublin Canyon, May 6, 1917; Niles Canyon, May, 1916; July, 1916; June 13, 1917; Yosemite, June 16, 1916; Tahoe City, August 23, 1916.

269. *Thamnotettix kirkaldyi* Ball. Redwood Canyon, July 2, 1916.

270. *Thamnotettix heidemanni* Ball. San Mateo Co., June 17, 1917; Monterey Co., June 16, 1917; Niles Canyon, May, 1916; Redwood Canyon, July 2, 1916.

271. *Thamnotettix mendicus* Ball. Crystal Springs, San Mateo Co., June 25, 1916; Muir Woods, July 15, 1917; Contra Costa Co., 600 feet, June 9, 1917; near Stockton, May 30, 1917. This species seems to be abundant everywhere in California on the nettle.

272. *Thamnotettix intricatus* Ball. San Francisco, July 18, 1916; Muir Woods, July 15, 1917; Redwood Canyon, August 6, 1916.

273. *Thamnotettix rupinatus* Ball. San Francisco, August, 1916; Muir Woods, July 15, 1917; Redwood Canyon, August 6, 1916. This species is doubtfully distinct from *intricatus*.

274. *Thamnotettix montanus* Van D. Santa Cruz Co., June 9, 1917; Contra Costa Co., June 14, 1917; Portland, Oreg., July 3, 1917; Seattle, Wash., July 7, 1917.

275. *Thamnotettix montanus reductus*, new variety

This form seems to be purely a color variety in which the yellow saddle is reduced to a small mark on the apex of the claval nervures, often on the outer nervure only, or in a few dark males it may be entirely wanting. The brown band on the base of the vertex is also reduced, sometimes to a mere shade, but there may be a dark line next the eye and a geminate spot on the basal middle. Both forms are found together throughout their range, but the present form is much more abundant toward the south, while those from Oregon and Washington are almost entirely typical *montanus*.

Holotype (No. 366), male, from Santa Cruz Co., in collection of the California Academy of Sciences.

Allotype, female, from Santa Cruz Co., in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

276. *Thamnotettix aureolus* Van D. Santa Clara Co., June 9, 1917; Muir Woods, July 15, 1917; Dublin Canyon, May 6, 1917; Wawona, June 17, 1916; Fallen Leaf Lake, August 21, 1916; Tallac, August 22, 1916; Tahoe City, August 23, 1916; Donner Lake, August 24, 1916; Summit, Placer Co., August 24, 1916; Soda Springs, Placer Co., August 24, 1916. In this species, as I have here identified it, the vertex is decidedly, almost acutely, angled; the color is smoky brown with the vertex and scutellum often paler or almost yellow, and the apex of the two claval nervures are pale. The elytra become smoky-hyaline toward the costa and the lower surface is paler, becoming pale yellow in some individuals from near the coast. The last ventral segment of the female is excavated for about half its width with a ligulate median tooth which attains the line of the lateral angles. My original description must have been drawn up from an immature example, as some immature specimens before me agree exactly with it. This species may best be distinguished from *flavocapitatus* by its longer and more acute vertex.

277. *Thamnotettix flavocapitatus* Van D. San Francisco, July 13, 1917; Crystal Springs, San Mateo Co., June 25, 1916; Muir Woods, July 15, 1917; Niles Canyon, May 23, 1916; Wawona, June 17, 1916; Fallen Leaf Lake, August 21, 1916.

278. *Thamnotettix commissus*, new species

Related to *flavocapitatus* and *geminatus*. Aspect of the former, the elytra subhyaline becoming fuscous at apex. Length 5-6 mm.

Vertex acutely right-angled, nearly two times as long on the middle as next the eye. Front long and narrow, sides gradually approaching, a little more abruptly near the apex; clypeus a little widened to the rounded apex. Pronotum one-fourth longer than the vertex. Elytra as in *geminata*, the costa gently curved.

Color yellow. Vertex and front tinged with fulvous, the base of the former pale; frontal arcs faint, brown. Pronotum tinged with green. Elytra hyaline, a little obscured at apex, the nervures strong, greenish yellow, becoming fuscous about the apical areoles. Abdomen and breast black with the margins of the segments yellow. Legs whitish, the spines of the hind tibiae set in black dots; genital pieces white.

Last ventral segment of the female deeply broadly excavated with a ligulate median tooth nearly equalling the lateral angles. Valve of the male short, rounded; plates small, long-triangular, subacute at apex, the sides fringed with long white hairs; pygofer not exceeding the plates.

Described from one pair taken by Mr. Giffard on Mt. Tamalpais in August, 1916, and one female taken by me at Hoberg's Resort, Lake Co., August 2, 1916. Distinguished among our green species by the hyaline elytra with the yellow veins becoming fuscous at apex.

Holotype (No. 367), female, from Lake Co., in collection of the California Academy of Sciences.

Allotype, male, from Mt. Tamalpais, in collection of the California Academy of Sciences.

Paratype, female, in collection of Mr. Giffard.

279. *Thamnotettix januatus* Ball. San Francisco, June 25, 1916.

280. *Thamnotettix atridorsum* Van D. Santa Clara Co., June 10, 1917; Niles Canyon, May, 1916; Redwood Canyon, July 2, 1916; August 6, 1916.

281. *Thamnotettix titusi* Ball. Crystal Springs, June 25, 1916; Santa Cruz Co., June 7, 1917; Monterey Co., June 11, 1917; Muir Woods, July 16, 1917; Niles Canyon, May, 1916; Redwood Canyon, July 2, 1916; Hoberg's Resort, Lake Co., August 2, 1916. Common everywhere on sage brush.

282. *Thamnotettix vespertinus* Ball. Niles Canyon, May, 1916.

283. *Thamnotettix visalia* Ball. San Francisco, July 18, 1916; Santa Cruz Co., 1200 feet, June 8, 1917; Muir Woods, July 15, 1917; Niles Canyon, May, 1916; June 13, 1917; July 6, 1916; Redwood Canyon, July 2, 1916; near Stockton, May 30, 1916.

284. *Thamnotettix vapidus* Ball. Near Lakeport, Lake Co., 2500 feet, August 2, 1916; Placer Co., August 22, 1916; Fallen Leaf Lake, August 21, 1917.

285. *Thamnotettix dissimilata* Ball. Placer Co., 3900 feet, August 20, 1916.

286. *Thamnotettix helvinus*, new species

Size and aspect of *gemellus*, but without the fuscous shade on the elytra; female segment abruptly produced and black at apex. Length $4\frac{1}{2}$ mm.

Vertex longer and more angled than in *gemellus*; obtusely right-angled at apex; one-third longer on the middle than next the eye; disk a little depressed, the anterior edge a little rounded. Front broad, and strongly convex. Clypeus narrowing to the apex with the sides regularly but feebly arcuated. Pronotum a little shorter than the vertex. Elytra long and narrow as in *gemellus*.

Color light yellow with the disk of the pronotum and elytra green; front smoky fulvous with the arcs pale, sometimes nearly obsolete, this smoky color forming a sinuated line on the anterior submargin of the vertex, thus indicating the reflected base of the front; eyes, ocelli, incised median line of the vertex and the facial sutures slenderly black. Scutellum sometimes tinged with green. Elytra green on their common disk, becoming hyaline toward the costa and apex, with pale yellow nervures, the extreme tip slightly infuscated. Tergum, its apex and margins excepted, the oviduct and apical tooth of the last ventral segment of the female and the tarsal claws black; spines of the hind tibiae set on minute black points.

Last ventral segment of the female strongly and abruptly produced in a convex black tooth over the base of the oviduct; lateral angles pointed but not attaining the line of the median tooth. Valve of the male short and truncate; plates long-triangular, subacute, the submarginal groove distinct but scarcely discolored, their margins apparently unarmed; pygofers not surpassing the plates, with a corona of stout white bristles at apex.

Described from two male and ten female examples taken as follows: Crystal Springs, San Mateo Co., June 25, 1916; Santa Cruz Co., 1500 feet, June 8, 1917; San Mateo Co., June 17, 1917; Portola Valley, San Mateo Co., May 4, 1917; Seattle, Wash., July 7, 1917, taken by Mr. Giffard, and Corvallis, Oreg., May 26, and June 29, 1896, by Mr. Thayer. This small slender green species may be distinguished by the

produced black-tipped last ventral segment of the female and the narrow plates of the male.

Holotype (No. 368), female, from Crystal Springs in the collection of the California Academy of Sciences.

Allotype, male, from San Mateo Co., in collection of the California Academy of Sciences.

Paratypes in collection of Mr. Giffard and in that of the author.

287. *Thamnotettix gerulus* Ball. Near Cloverdale, Sonoma Co., August 3, 1916.

288. *Thamnotettix bullatus* Ball. Niles Canyon, May 23, 1917; June 13, 1917.

289. *Thamnotettix longiseta* Van D. Crystal Springs, San Mateo Co., Niles Canyon. May 31, 1917; Santa Cruz Co., 500 feet, June 9, 1917; Tahoe City, August 23, 1916; Donner Lake, August 24, 1916; Portland, Oreg., July 3, 1917. Some of the specimens I have placed under this name want the outer pair of black points on the anterior margin of the head and in other individuals those behind the ocelli are wanting.

290. *Thamnotettix umbraticus* Ball. San Mateo Co., June 17, 1917; Santa Cruz Co., June 16, 1917.

291. *Chlorotettix unicolor* (Fh.) Tallac, August 22, 1916.

292. *Neococlidia lineata* Bak. Fallen Leaf Lake, August 21, 1916; Placer Co., August 20, 1916; Donner Lake, August 24, 1916.

293. *Neococlidia obscura* Bak. Los Altos, July 26, 1916; Mt. Tamalpais, August 16, 1916; near Middleton, Lake Co., August 2, 1916.

294. *Cicadula sexnotata* (Fall.) San Francisco, May, 1916; July 2, 1916; Crystal Springs, San Mateo Co., June 25, 1916; Los Altos, July 26, 1916; Santa Cruz Co., 1200 feet, June 9, 1917; Niles Canyon, July 24, 1916; May, 1916; September 2, 1916; Fallen Leaf Lake, August 21, 1916; Tahoe City, August 22, 1916; Tallac, August 22, 1916; Soda Springs, Placer Co., August 24, 1916; Portland, Oreg., July 3, 1917; Ashland, Oreg., July 10, 1917; Seattle, Wash., July 7, 1917.

295. *Cicadula lacta* (Uhl.) Fallen Leaf Lake, August 21, 1916.

296. *Balclutha impicta* (Van D.) Marin Co., July 15, 1917; Santa Cruz Co., June 9, 1917; Niles Canyon, May, 1916; July 24, 1916; Wawona, June 17, 1916; Yosemite, June 16, 1916; Portland, Oreg., July 3, 1917; Seattle, Wash., July 7, 1917.

297. *Eugnathodus abdominalis* (Van D.) San Mateo Co., June 17, 1917; Portola Valley, San Mateo Co., May 5, 1917; Niles Canyon, July 24, 1916; near Stockton, May 31, 1916; Hoberg's Resort, Lake Co., August 1, 1916; Placer Co., August 23, 1916; Tahoe City, August 23, 1916; Donner Lake, August 24, 1916.

298. *Alebra albostrigella* (Fall.) Yosemite, June, 1916.

299. *Dicraneura carneola* (Stål.) Santa Cruz Co., June 9, 1917; Marin Co., July 15, 1917; Portola Valley, San Mateo Co., May 4, 1917; Wawona, June 17, 1916; Yosemite, June 16, 1916; Placer Co., August 22, 1916; Fallen Leaf Lake, August 21, 1916; Soda Springs, Placer Co., August 24, 1916; Portland, Oreg., July 3, 1917.

300. *Empoasca smaragdula* (Fall.) San Francisco, August, 1916; Crystal Springs, San Mateo Co., June 25, 1916; Niles Canyon, May, 1916.

301. *Empoasca aureoviridis* (Uhl.) Fallen Leaf Lake, August 21, 1916.

302. *Empoasca sublactea*, new species

Allied to *aureoviridis* and *smaragdula*; smoky greenish; pronotum and usually the vertex with three whitish marks; elytra milky-hyaline, with the sutural and commissural nervures slenderly fuscous. Length 5 mm.

Vertex short, regularly rounded, of equal length across its whole width. Face as in *smaradula*; sides of the front nearly rectilinear; clypeus regularly narrowed to an elliptical apex. Pronotum as in the allied species, the humeral angles broadly lobate as in *smaragdula*, the arcuation across the base of the scutellum being nearly rectilinear.

Last ventral segment of the female longer than in *aureoviridis*, when viewed from the side abruptly notched for about half its width. Last ventral segment of the male shorter than in the female, but little produced, the sides very feebly notched; plates when viewed from below obtusely triangular; their long, twisted, upturned apices, when viewed from the side, much broader and more truncate at apex and clothed with longer bristles than in *smaragdula*; hind margin of the pygofer viewed from the side, vertical, very slightly arcuated, the dorsal angle forming a distinct blunt tooth. In *smaragdula* this twisted apex of the plates is narrower and elliptical at apex, and the hind margins of the pygofer is strongly arcuated, with the dorsal angle scarcely produced.

Color of body yellowish to dark greenish in places in the female; the apex of the tibiae and the tarsi often of a bluish green. In strongly colored examples the front shows a broad whitish median longitudinal vitta and base, and on the vertex a whitish band next the eyes, a narrower longitudinal one on the middle and an oblique transverse one either side at apex. Pronotum with three white spots on the anterior margin, the median often continued as a fainter median vitta to the apex of the scutellum. Elytra uniformly milky-hyaline, scarcely tinged with dull green in the female, not at all in the male, the commissural and sutural nervures of the clavus slenderly fuscous. Apex of the elytra with a smoky cloud in the female which may cover much of the surface in the male. Wings milky-hyaline with fuscous nervures. Abdomen blackish in the male, narrowly margined with yellow, dull green in the female.

Described from six male and seventeen female examples taken by Mr. Giffard at Summit, Placer Co., August 24, 1916, at 7000 feet elevation. Immature examples of *smaragdula* show indications of the white marks on the head and pronotum and they sometimes are absent in the females of this species, but the elytral characters are constant in *sublactea* and the male genital characters are obviously distinct. That this type material is mature is evident by the presence of the pruinose spots on the elytral costa in some males.

Holotype (No. 369), male, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

303. *Empoasca transversa*, new species

Aspect of a small dark *aureoviridis*; dark greenish, elytra bifasciate with dusky. Length $4\frac{1}{2}$ - 5 mm.

Head with the eyes distinctly broader than the pronotum. Vertex shorter and broader than in *trifasciata*. Hind margin of the pronotum moderately concave, nearly truncate in *trifasciata*. Last ventral segment of the female considerably produced, the sides moderately sinuated, much as in *aureoviridis*; in *trifasciata* shorter with the sides scarcely sinuated. Twisted apex of the male plates very broad, membranous, almost spatulate. Pygofers distorted in the specimen before me, but apparently produced as in *aureoviridis*.

Color dark dull green, becoming blue green on the legs, apex of the abdomen and extreme base of the costa. Face and vertex marked with white as in *sublactea* and *aureoviridis*. Anterior margin of the pronotum with three white spots, usually distinct, the intermediate produced in a median pale line which may cross the scutellum. Elytra with a faint transverse fuscous band crossing the middle of the clavus and another on the apical areoles, neither attaining the costa, the apical beginning at the tip of the clavus and interrupted by the pale nervures. Tergum inclined to golden green.

Described from one male taken by Dr. J. C. Bradley at Leona Heights, Alameda Co., in August, 1908, and six fe-

males taken by Mr. Giffard at Tahoe City, Placer Co., August 23, 1916. This may prove to be a maculated variety of *aurcoviridis* but that seems very unlikely. *Empoasca trifasciata* is a little smaller with a more prominent head. It is yellow rather than green, and has three well-defined transverse fuscous bands, the first of which, covering the posterior portion of the pronotum, is not indicated in this new species, and the apical is shorter, beginning very little before the transverse nervures and has all the contained nervures concolorous, whereas in *transversa* they are pale within this posterior band.

Holotype (No. 370), female, from Tahoe, in collection of the California Academy of Sciences.

Allotype, male, from Leona Heights, in collection of the author.

Paratypes in both collections and in that of Mr. Giffard.

304. *Empoasca unicolor* Gill. Hamilton Station, Tuolumne Co., June, 1916.

305. *Empoasca obtusa* Walsh. San Francisco, July 18, 1916; Los Altos, July 26, 1916; Portola Valley, San Mateo Co., May 4, 1917; Niles Canyon, May, 1916, July 24, 1916; Placer Co., August 22, 1916; Summit, Placer Co., August 24, 1916.

306. *Empoasca unica* (Prov.) Laurel Dell, Lake Co., August 2, 1916; Tahoe City, August 23, 1916.

307. *Empoasca snowi* Gill. Los Altos, July 26, 1916; Wawona, June 17, 1916.

308. *Empoasca aspersa* G. & B. Monterey Co., June 10, 1917.

309. *Empoasca alboscripta* Van D. San Francisco, July 18, 1916; Los Altos, July 26, 1916; Portola Valley, San Mateo Co., May 4, 1917; Muir Woods, July 15, 1917; Niles Canyon, May, 1916; July 14, 1916; Redwood Canyon, August 6, 1916; San Joaquin Co., May 25, 1916; Placer Co., August 22, 1916.

310. *Empoasca ruficeps*, new species

Small; yellowish green, mottled with brown; pronotum and scutellum marked with sanguineous-brown, each with three white points. Length 3½ mm.

Head large, distinctly broader than the pronotum, strongly produced. Vertex convex, forming a right angle at apex, its median length equal to its basal width; front prominent, convex, sides nearly parallel below the base of the antennæ. Elytra with five apical areoles, the second triangular and pedunculate. Last ventral segment of the female rather strongly produced with its apical margin entire. Male plates triangular, the sides nearly rectilinear to the subacute tips.

Color yellowish-green, the tibiæ becoming blue at apex. Vertex sometimes tinged with orange, with a paler spot on either side, often with a darker mark either side of a pale median line; base of front marked with a pale dot at apex placed in a square of four similar dots and usually there are two others on either side; apex with a pale median vitta; cheeks with about three elongated pale marks. Pronotum and scutellum sanguineous-brown, the former with three conspicuous whitish spots on the anterior margin, the latter with a darker spot at each angle and a median transverse row of three pale points just below the incised line. Elytra subhyaline, irregularly mottled with yellowish, the tip of the clavus with a conspicuous rufous-brown spot; apex, from a little before the transverse nervures, deeply infuscated, with strong pale nervures. Abdomen often pale yellow at base and green at apex.

Described from thirty specimens taken by Mr. Giffard at Los Altos, July 26, 1916, on pitcher-sage (*Sphacele colycina*), and at Westpoint on Mt. Tamalpais, 1300 feet elevation, August 16, 1916.

Holotype (No. 371), female, from Los Altos, in collection of the California Academy of Sciences.

Allotype, male, from Los Altos, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

311. *Empoasca mali* (LeB.) Niles Canyon, September 2, 1916; Laurel Dell, Lake Co., August 3, 1916.

312. *Empoasca viridescens* Walsh. Los Altos, July 26, 1916; Santa Cruz Co., 1200 feet, June 8, 1917; Monterey Co., June 10, 1917; Muir Woods, August 16, 1916; Niles Canyon, May, 1916; June 13, 1917; July 24, 1916; Walnut Creek, August 10, 1916; near Stockton, May 30, 1917; Wawona, June 17, 1916; Fallen Leaf Lake, August 21, 1916; Ashland, Oreg., July 10, 1917.

313. *Empoasca birdii* Godg. San Mateo Co., 300 feet, June 25, 1917.

314. *Typhlocyba collina* Flor. Muir Woods, July 15, 1917; Niles Canyon, June 13, 1917; Walnut Creek, May 13, 1917.

315. *Empoa commissuralis* (Stål). Tahoe City, August 23, 1916.

316. *Empoa rosae* (Linn.) San Francisco, May, 1916.

317. *Erythroncúra comes vitifex* Fh. Crystal Springs, San Mateo Co., June 25, 1916; San Mateo Co., June 20, 1917.

318. *Erythroncúra comes coloradensis* Gill. Niles Canyon, May, 1916.

319. *Erythroncúra dentata* Gill. Los Altos, July 26, 1916; near Cloverdale, Sonoma Co., August 3, 1916.

320. *Scolops abnormis* Ball. Sausalito, July 15, 1917; Niles Canyon, June 13, 1917; near Lakeport, Lake Co., 2500 feet, August 2, 1916; Placer Co., August 20, 1916.

321. *Scolops piccus* Van D. Laurel Dell, Lake Co., August 2, 1916.

322. *Catonia memorialis* Van D. Fallen Leaf Lake, August 21, 1916; Wawona, June 17, 1916.

323. *Catonia clara*, new species

Allied to *fusca* and *irrorata*, but easily distinguished by the single black band on the front; fuscous, elytra dotted with white, the carinæ of the vertex and notum pale, bordered with fuscous. Length $4\frac{1}{2}$ - 5 mm.

Vertex distinctly transverse, a little longer than in *irrorata* but shorter than in *fusca*; carinæ distinct; front convex as in *fusca*. Pronotum short and deeply emarginate as in the allied species. Elytral neuration similar to that of *fusca*, the outer sector forked distinctly in advance of the inner.

Color pale testaceous, the elytra fuscous with pale nervures, the areoles marked by a row of short white transverse veinlets along the longitudinal nervures excepting the costal, becoming fewer on the membrane; the costal areole paler with three or four transverse fuscous clouds; carinæ of the vertex, pro- and mesonotum pale, bordered with fuscous lines; sides of the pronotum with about three fuscous areoles behind the eyes. Front pallid, tinged with yellow on its base, marked with a piceous band at apex and a row of about six fuscous points next each lateral carina. Clypeus tinged with yellow and faintly embrowned at apex. Pectus and legs testaceous, faintly clouded with fuscous. Abdomen fuscous, becoming almost black in the male.

Described from twenty examples taken by Mr. Giffard on *Baccharis* at Los Altos, Santa Clara Co., July 26, 1916.

Holotype (No. 372), male, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

324. *Catonia rubella* Van D. Placer Co., August 20, 1916.

325. *Catonia albicosta*, new species

Allied to *costata* and *succinea* and intermediate between these species but with the broad front of the former; fulvo-ferruginous, costal area clear white as far as the stigma. Length $5\frac{1}{2}$ mm.

Vertex distinctly transverse, proportionately shorter than in *costata*; carinæ sharp, forming a somewhat acute angle before. Front broad, convex in both diameters, scarcely wider below; the median carina slender but evident. Clypeus convex, its median carina nearly obsolete except at base, the lateral broad, horizontal. Pronotum about two-thirds the length of the vertex, deeply angularly emarginate behind as in *costata*. Mesonotum as in the allied forms, the lateral carinæ approaching but little anteriorly. Elytra intermediate in length between the two species mentioned, the transverse costal nervures obscure beyond the stigma.

Color fulvous-brown, polished, darker than in *succinea*; head, pronotum, patagiæ and legs paler fulvo-testaceous; clypeus, pleural pieces and legs pale fulvous; costal areole of the elytra white as far as the stigma; nervures concolorous; abdomen darker; apical teeth of the hind tibiæ and tarsi blackish as in *succinea*.

Described from twelve examples representing both sexes, taken on manzanita at Fallen Leaf Lake by Mr. Giffard on August 21, 1916. This interesting addition to our fulgorid fauna most closely resembles *succinea* but its shorter vertex, smaller size, darker color and especially the white costa will distinguish it.

Holotype (No. 373), male, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

326. *Catonia succinea* Van D. Fallen Leaf Lake, August 21, 1916. This species seems to be most abundant in July.

327. *Oliarus hesperius*, new species

Very near *aridus* Ball but differing markedly in the male genitalia; black with pale carinæ; disk of the mesonotum castaneous; front black with pale carinæ and a conspicuous white spot at apex of the frontal compartments either side of the base of the clypeus. Length 6-8 mm.

Vertex nearly square, its length and breadth subequal, its transverse carina obtusely angled or almost rounded, leaving a rather broad apical compartment; front much expanded, its lateral angles rounded. Pronotum deeply, angularly emarginate; intermediate mesonotal carinæ abbreviated before and behind. Elytral nervures strongly granulate and setigerous, the outer sector forked a little behind the inner.

Male pygofers shorter than in *aridus*, the ventral notch wide with its sides diverging more than in that species, the lateral margins rounded behind and wanting the large notch at the dorsal angle found in *aridus*; dorsal surface not longer than the stiles, roundly narrowed to the anal tube; stiles narrow, parallel, contiguous, subterete, their sagitate apical expansions cut out so as to leave the lateral extensions similar to the apical; in *aridus* this sagitate apex is broad-triangular with its apical margin scarcely if at all excavated, the apex of the stiles being much surpassed by the elliptically produced dorsal surface.

Color black or nearly so with the disk of the mesonotum castaneous between the lateral carinæ; carinæ of the head and pronotum slenderly

lined with pale; front and clypeus deep black, the former polished, the latter sometimes paler, the lateral white spots very distinct, oval, smaller and better defined than in *aridus*. Elytra whitish-hyaline; nervures white, becoming fuscous at apex, strongly dotted; the stigma large, fuscous, with its base white; female with fuscous spots at the forks of the sectors and on the transverse nervures.

Described from a long series representing both sexes, taken about the bay district, the following localities being represented in Mr. Giffard's material: Los Altos, July 26, 1916; Redwood Canyon, July 2, 1916; Walnut Creek, August 10, 1916; and near Cloverdale, Sonoma Co., August 3, 1916. I have taken this species at San Francisco and Berkeley. This seems to be the most abundant species in the central coast region of California, while farther south it is replaced by *californicus*, which is equally abundant in San Diego Co. This is the species I had formerly determined as *franciscanus*, but a careful study convinces me that Stål's species must be the *complectus* of Ball.

Holotype (No. 374), male, from Los Altos, in collection of the California Academy of Sciences.

Allotype, female, from Los Altos, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

328. *Oliarus exoptatus*, new species

Allied to *californicus* but with a broader vertex and heavier elytral venation; may be distinguished from *aridus* and *hesperius* by the absence of white spots at apex of the front. Length $5\frac{1}{2}$ -7 mm.

Vertex nearly square, a little broader than in *hesperius*; the anterior carina quite regularly arcuated. Front broad, intermediate in form between *californicus* and *hesperius*. Pronotum about as in *hesperius*, longer than in *californicus*; intermediate carinae of the mesonotum strongly convergent and not abbreviated anteriorly. Elytral nervures heavy and maculated. Ventral notch of the male pygofers broad and shallow, its margins strongly oblique; sides of the pygofers short and broadly rounded, not surpassing the middle of the stiles; dorsal surface strongly produced either side of the anal tube and somewhat depressed at the apex of the lobes, considerably surpassing the stiles. Stiles slender, subterete, lyrate, diverging and again approaching at apex, their outer angles strongly produced in a long appendage which is curved upward and backward almost to the margin of the pygofer.

Color deep black, the slender margins of the head and pronotum pale, those of the mesonotum concolorous or nearly so. Elytra whitish-hyaline, the nervures heavy, whitish but thickly and strongly granulate, giving them a blackish aspect; transverse veinlets carrying a fuscous line, the middle of the corium with an obsolete fuscous band; stigma large but broken by a white band; knees, tibiae and tarsi testaceous-brown.

Described from one male taken by Mr. Giffard at Fallen Leaf Lake, August 21, 1916, on manzanita, and a female taken in Placer Co., August 20, 1916. This species is quite distinct from any yet described, but finds its nearest ally in *californicus*.

Holotype (No. 375), male, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

329. *Oliarus franciscanus* Stål. (*complectus* Ball.) San Joaquin Co., near Stockton, May 31, 1917.

330. *Cixius basalis* Van D. Niles Canyon, May, 1916; Dublin Canyon, May 6, 1916; near Stockton, May 30, 1916; Portland, Oreg., July 3, 1917.

331. *Cixius cultus* Ball. San Francisco, July 13, 1917; San Mateo Co., June 17, 1917; Portola Valley, San Mateo Co., May 4, 1917; Santa Clara Co., June 11, 1917; Santa Cruz Co., June 7, 1917; Muir Woods, July 15, 1917; Niles Canyon, May 23, 1917; Redwood Canyon, July 2, 1916; near Stockton, May 25, 1917; borders of Clear Lake, Lake Co., August 2, 1916.

332. *Oeclelius nanus* Van D. Redwood Canyon, July 2, 1916.

333. *Oecleus venosus* Van D. Niles Canyon, July 24, 1916; near Stockton, May 30, 1917; near Lakeport, Lake Co., 2500 feet, August 2, 1916. This is a very common insect all over California. It varies much in size and color as well as in the darkening of the elytral nervures as does the eastern *borcalis*; the genital characters are, however, sufficiently distinct.

334. *Bruchomorpha suturalis* Melich. Redwood Canyon, July 2, 1916. This is the first west coast record for this species.

335. *Apelonema giffardi*, new species

Closely allied to *histrionica*; costal area of the elytra black; front entirely pale. Length 3-4 mm.

Vertex as long as in *histrionica*, equalling the pronotum; the anterior margin more arcuated in the male. Elytra broader, the costal margin being more rounded. Last ventral segment of the female more narrowly and strongly produced, in *histrionica* entire with its apex minutely notched. Third ventral segment of the male much less deeply emarginate; inner margin of the male plates subangularly lobed, approximate at the middle

only; in *histrionica* obtusely rounded, with their inner margins nearly parallel or at most a little divergent dorsally.

Color about as in *histrionica*; black varied with testaceous-white, but faintly tinged with yellow in places. Vertex, pro- and mesonotum with a broad white median vitta bordered either side by a heavy black line; lateral areas dusky with pale pustules and carinæ; discal area of the front entirely white, including the carinæ; lateral areas of the front black with a concentric row of about eight white pustules and a shorter row of four next the eye; clypeus black. Elytra reaching to near the apex of the third dorsal segment in the male, to apex of second in the female; whitish subhyaline, slightly infuscated on the broad clavus, the nervures inconspicuous; broad costal area black, bordered within by a clearer whitish ray. Abdomen black; tergum with three approximate broad white longitudinal vittæ, the median bisected by a slender longitudinal carinate black line; sides exteriorly with two longitudinal rows of pale pustules placed on broken pale spots. Pleural pieces above and coxal region more or less whitish; apices of the femora, lines on the tibiæ and basal three segments of the tarsi pale.

Described from one female and two males, all brachypterous, taken by Mr. Giffard near Stockton in the San Joaquin Valley, May 25, 1917. It affords me pleasure to dedicate to Mr. Giffard this interesting addition to the fulgorid fauna of our state in recognition of the services he has rendered entomology by careful and systematic collecting of the Hemiptera, both here and in the Hawaiian Islands.

Holotype (No. 376), male, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratype, male, in collection of the author.

336. *Dictyssa clathrata* Melic. Placer Co., August 20, 1916, on manzanita.

337. *Naethus maculatus* Melich. Los Altos, July 26, 1916, on Baccharis; Mt. Tamalpais, August 16, 1916; near Cloverdale, Sonoma Co., August 3, 1916; Witter Springs and Blue Lakes, Lake Co., August 2, 1916.

338. *Naethus maculatus fasciatus*, new variety

Differs from the species by having the elytra marked by a continuous broad brown band from the inner angle of the clavus to the apex of the costal areole, and a still broader one at apex, omitting, however, the apical row of small areoles and usually a number of the subapical. These bands may vary in width so as to connect with the form described by Melichar where they are broken into spots and at times become nearly or quite obsolete.

Described from a long series taken near Lakeport, Lake Co., by Mr. Giffard and myself, August 2, 1916.

Holotype (No. 377) male, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

339. *Naethus fenestratus* Melich. Los Altos, July 26, 1916; Mt. Tamalpais, August 16, 1916; Niles Canyon, July 14, 1916; near Lakeport, 2500 feet, August 2, 1916.

340. *Danepteryx manca* Uhl. San Francisco, June, 1916, Redwood Canyon, July 2, 1916, August 6, 1916; Dublin Canyon, May 6, 1917. Melichar has described one species in this genus (*lurida*), and Kirkaldy two (*barbaræ* and *artemisæ*), but I am unable to find any characters by which to distinguish them. Mr. Giffard has very kindly brought me a female specimen of *barbaræ*, labeled as such in Kirkaldy's own handwriting, and there is only the paler brown color to distinguish it. Kirkaldy says "front wider", but the wider front is characteristic of the female *manca*; he states that the base of the front is truncated but that character depends upon the development of the individual and it is not truncate in Kirkaldy's specimen before me; the longer pronotum is also a character of the female sex in this genus. The only useful characters left for *barbaræ* are its paler color and larger size and I am not sure but both may depend upon maturity. Both forms are found together upon the same bush throughout California as is also a blackish form with pale elytra which seems to be conspecific. This is one of our most abundant insects, being found everywhere upon sagebrush. I have retained the four names in my catalogue until someone has the time to make a careful microscopical study of the male genitalia and other characters.

341. *Pissonotus delicatus melanurus*, new variety

Like the typical form in every respect except that the fulvous portions are deepened to piceous in the female or black in the male. The genital characters are obscure but do not seem to differ in any respect from those of the species. This is a pretty form of a piceous or deep black color with the head, pronotum and broad apical margin of the elytra white; the base of the tergum beneath the white margin of the elytra

is pale or fulvous. Mr. Giffard took a long series in San Joaquin Co., near Tracy, the last of May, 1917, on *Grindelia camporum*. About one-fourth of those taken were males. Some of the females are as deeply colored as are the males, but some are nearly as pale as some examples of *delicatus* from Florida now in my collection. The darker males have the femora mostly black and a black line on the base of the tibiæ above, the basal segment of the antennæ is black and the front is infuscated below.

Holotype (No. 378), male, from San Joaquin Co., in collection of the California Academy of Sciences.

Allotype, female, from San Joaquin Co., in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

342. *Pissonotus frontalis* Crawf. Mr. Giffard has taken a long series of this species, always on wormwood, *Artemisia heterophylla*. Among this material the following localities are represented: Santa Cruz Co., June 7, 1917; Niles Canyon, May, 1916 and 1917, June 13, 1917; near Stockton, San Joaquin Co., May 30, 1917. Three of the males and three of the females were macropterous. These are piceous-black with the pronotal carinæ a little whitish anteriorly, the vertex cinerous with the two black punctures distinct and the front mostly black, the base between the eyes being brownish with the white marks nearly obliterated. The elytra are hyaline as is usual in macropterous individuals in this genus with the nervures pale brown and the basal margin of the clavus infuscated. I took what seems to be the same species at Alpine, Fosters, Lakeside and San Diego, all in San Diego Co., during April and May, 1913.

343. *Laccocera vittipennis* Van D. Tallac, 6000 feet, August 22, 1916, brachypterous. The male genital characters in this species are subject to considerable variation in both eastern and western material. The ventral process may be very short or considerably produced and the stiles may be nearly terete and broadly divergent or broader and sulcate below and much less divergent. These differences occur in material taken at the same place and time and evidently represent individual variation.

344. *Stobaera giffardi*, new species

Smaller than *tricarinata*, most nearly related to *bilobata* and like that species with a dark elytral stigma; face variegated; legs lineated and banded; elytra maculated, the nervures strongly punctate and bearing stiff bristles. Brachypterous form, length, male $2\frac{1}{2}$ mm., female $3\frac{1}{2}$ mm.

Vertex elongated as in *bilobata* but broader than in that species, the three frontal carinae very prominent at apex of head. Front parallel or nearly so. Second segment of antennae about twice the length of the first; scarcely narrowed at apex. Pronotum as long as the superior aspect of the head, the lateral carinae strongly angled behind the eyes, then parallel to the hind margin; lateral carinae of the mesonotum straight and more oblique than in *bilobata*. Elytra scarcely exceeding the abdomen; outer branch of the first sector forked a very little anterior to the forking of the second sector; all the nervures strong and prominently punctate, the bristles long and stiff. Calcar rather narrow and lanceolate.

Color testaceous-grey or faintly tinged with brown in the female, darker or almost castaneous in the male. Carinae of the head, pronotum and mesonotum pale, maculated with darker in the male, scarcely so in the female. Face brown, paler in the female, in both sexes darker across the apical half of the front; a narrow whitish band crosses the face at the lower angle of the eye and a more slender one on the apex of the front, the darker apical portion of the front with a pale crescent; lateral carinae with two white points between the eyes and on the median is another placed between the lateral; apex of the clypeus marked with two brown points. Antennae brown in the male, mostly pale in the female; sides of the pronotum with a few pale points. Elytra cinerous with faint indications of the dark markings found in *tricarinata*; stigma small, squarish, nearly black, followed by a transverse white vein. Tergum infuscated on either side toward the base. Legs pale; coxae, femora and tibiae twice banded with fuscous, the femora lineated with pale brown. Metapleura marked with a large round fuscous spot; the ventral segments dotted with fuscous points on either side.

Apex of the male genital segment infuscated much obscuring the genital characters; plates vertical, broad and appressed, their apex obliquely truncated with the outer angle acute and almost spinose; the stiles covered by the plates.

Described from numerous individuals of both sexes taken by Mr. Giffard as follows: Portola Valley, San Mateo Co., May 4, 1917; Santa Cruz Co., June 7, 1917; Niles Canyon, May, 1916, May 23, 1917; Yosemite, June, 1916. These were all taken on wormwood.

This species corresponds in size with *bilobata* and *minuta*. It agrees with *bilobata* in possessing a dark stigma and with *tricarinata* and *minuta* in the banded legs. In some darkly colored males the elytra are almost entirely fuscous as far as the stigma with the costa pale and always the commissural nervure is pale, interrupted with fuscous beyond the scutellum and again at apex. The young are brown varied with whitish with the head short, transverse and black above and the antennae and base of the front are also black; in the later

moult the insect becomes more variegated and cinerous with the vertex longer.

Holotype (No. 379), male, from Niles, in collection of the California Academy of Sciences.

Allotype, female, from Niles, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

345. *Liburnia terminalis* Van D. Mr. Giffard took a long series of this species at Seattle, Wash., July 7, 1917, that differ in no respect from the types in my collection but show much variation in color. My material is from Jamaica and Crawford reports it from Nicaragua, but it has not been reported from intermediate points. It lives on marsh grass along the shore of Puget Sound.

346. *Liburnia lateralis* Van D. Fallen Leaf Lake, August 21, 1916, one brachypterous example.

347. *Liburnia pellucida* (Fabr.) Portland, Oreg., on Ranunculus, July 3, 1917.

348. *Liburnia muiri*, new species

Aspect of *kilmani* but more closely related to *lateralis*; yellowish-testaceous; sides of the tergum partly black; vertex, pronotum and scutellum with a dorsal white vitta; front broad as in *detecta*, the pale carinae interruptedly margined with fuscous. Length to tip of abdomen $3\frac{1}{2}$ mm.

Vertex oblong, a little longer than broad, gently rounded before, passage to the front rounded, the carinae distinct but not sharp over the apex; basal areoles confused, the apical distinct but not attaining the tip of the head as seen from above. Front about as broad as in *detecta* but very differently shaped, but little narrowed between the eyes; the sides straight and parallel or slightly approaching above. Pronotum as long as the vertex in the macropterous form, a little shorter in the brachypterous; lateral carinae broadly divergent, their abbreviated apex curved outward but not obviously continued around behind the eyes. Mesonotum distinctly carinate. Macropterous elytra reaching for one-half their length beyond the abdomen, the brachypterous elliptical at apex and attaining the middle of the fifth tergal segment.

Apex of the male pygofer small and nearly round; dorsal notch broad and shallow, the ventral margin entire, regularly arcuated. Stiles broad, blunt but hardly truncated at apex, divergent, lying parallel with the lateral wall of the pygofer, their inner margins fringed with short stiff hairs; anal tube thickened below but without ventral process. Ovipositor of the female much shorter than the pygofers.

Color dull yellowish-testaceous. Dorsal line white, generally broadened on the thorax and more slender on the tergum where it may become obsolete; front tinged with fulvous, the carinae white, interruptedly bordered with fuscous; clypeus black with thick white carinae; disk of the metapleura, some marks on the pro- and mesopleurae, sides of the venter and tergum black, the latter sometimes quite broadly black. Elytra faintly fuliginous with concolorous nervures, the marginal white, the apical por-

tion of the others a little infuscated in the macropterous form. In the male the abdomen is black excepting a median vitta above and below and the base of the tergum which is dull fulvous. Genital segment of the male with the margins of the pygofer above and the anal tube pale. Legs concolorous or obscurely lineated, the tips of the spines and the tarsal claws black.

Described from one male and four female examples taken by Mr. Giffard at Portland, Oreg., on grasses, July 3, 1917. One of the females is macropterous. This species has the color, stout form and pale dorsal vitta of *kilmani*, but the front and vertex are a little broader and the characters of the male genitalia are entirely different. It gives me pleasure to name this species for Mr. Frederick Muir of Honolulu, who is giving this subfamily a much-needed and careful revision.

Holotype (No. 380), male, in collection of the California Academy of Sciences.

Allotype, female, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

349. *Librunia semicinctus*, new species

Closely allied to *muiri* but with very different male genitalia; pale yellowish-testaceous with a blackish cloud on either side of the tergum and some blackish marks beneath, more extended in the male; frontal carinae pale or concolorous, the frontal foveae becoming darker apically next the carinae. Length 2-3½ mm. to tip of the abdomen.

Vertex broad, nearly square, shorter than in *muiri*, the anterior margin but feebly arcuated; median carina obtuse but moderately distinct over the apex of the head. Front nearly as in *muiri*, the sides very slightly arcuated in the female. Antennae as in the preceding, the first segment scarcely longer than wide; the second attaining the base of the clypeus. Pronotum as long as the vertex, the carinae rather obscure, the lateral obviously curved around behind the eyes. Brachypterous elytra reaching on to the fifth tergal segment, the macropterous exceeding the abdomen by one-third their length.

Genital segment of the male very short; aperture transverse, very wide below, the ventral wall nearly straight across; dorsal sinus broad, reaching to the preceding segment; ventral nearly as deep as broad, its fundus rounded. Stiles narrow and long, broadly divergent, nearly parallel to the lower margin of the pygofer, a little curved and acute at apex; ventral wall of the anal tube with a slender median prolongation which is expanded interiorly as a broad plate and abruptly incurved beyond, its apex nearly attaining the base of the stiles. Oviduct of the female short, black, not nearly reaching the apex of the pygofers.

Color dull yellowish-testaceous. Frontal foveae with a black vitta beyond the middle next the lateral carinae; this vitta may be interrupted above and may be widened below next the apex. Lateral foveae of the clypeus usually black. Sides of the tergum with a more or less extended blackish area; the pleural pieces and venter more or less maculated with

fuscous or black; the metapleura sometimes with a black spot. Legs, antennæ and rostrum pale, the femora sometimes faintly lineated, the rostrum tipped with black. Apex of the tarsi black.

Described from four male and nine female brachypterous examples taken by Mr. Giffard at Portland, Oreg., July 3, 1917, and Seattle, Wash., July 7, 1917. One macropterous female taken at Portland is darker with the abdomen, pectus and fovæ of the face mostly black and the elytra quite deeply fuliginous. This species is very close to *kilmani*, but the vertex is shorter with its carinæ less acute, the front is differently marked and the whole insect is paler in color. The male genitalia are very similar in the two species, but in *semicinctus* the aperture of the pygofers is more transverse, the plates are not as straight across, are broader and less acute at apex and are without the fringe of hairs found in *kilmani* and the anal process is more incurved at apex and differently shaped. The female may be distinguished from *muiri* by the shorter vertex, the more curved lateral pronotal carinæ, the different markings in the frontal fovæ and the want of a regular fuscous line exterior to the lateral carinæ of the front.

Holotype (No. 381), male, from Portland, in collection of the California Academy of Sciences.

Allotype, female, from Portland, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

350. *Liburnia consimilis* Van D. San Francisco, May, 1916; Portola Valley, San Mateo Co., May 4, 1917; near Stockton, May 31, 1917; Blue Lakes, Lake Co., August 3, 1916; Yosemite, June 16, 1916; Tallac, August 22, 1916; Soda Springs, Placer Co., August 24, 1916. This is the most abundant and widely distributed delphacid in California. The males are ordinarily black with the pronotum more or less invaded with white posteriorly. Some females are almost as deeply colored as are the males, but generally they are much paler and even become fulvous with the basal angles of the pronotum black, when they much resemble *campestris*, but they can always be distinguished from that species by the narrower and longer vertex with more distinct carinæ

and by the black line on the commissural margin at the apex of the clavus.

351. *Liburnia puella* Van D. Muir Woods, July 15, 1917; Soda Springs, Placer Co., August 24, 1916; Portland, Oreg., July 4, 1917; Seattle, Wash., July 8, 1917.

352. *Liburnia campestris* Van D. Niles Canyon, May 31, 1917, one male; near Stockton, May 30, 1917, one female, both being macropterous.

353. *Liburnia tuckeri* Van D. Niles Canyon, September 3, 1916, one macropterous male; Monterey Co., June 11, 1917, six macropterous and nine brachypterous examples.

354. *Liburnia fluvialis*, new species

A large stout brown species closely resembling *magnifrons*; abdomen and pleural pieces marked with black. Length $3\frac{1}{2}$ mm.

Head short, broad, nearly as wide as the pronotum, broadly rounded before in both diameters, apex smooth with the carinæ obsolete there. Vertex one-half broader than long, the fovæ obscure. Front broad, a little narrowed from ocelli to apex; carinæ distinct below. Pronotum nearly as long as the head viewed from above, almost truncate between the eyes, feebly excavated behind; carinæ obtuse, indistinct. Mesonotum a little longer than the pronotum, carinæ normal but obtuse and indistinct. Elytra almost attaining the apex of the second tergal segment, small, truncated, the nervures distinct, concolorous. Abdomen broad, ovate, with the median keel distinct. Hind tibia scarcely longer than its femora, the calcar about one-half the length of the first tarsal segment, smooth, broad at base, the sides straight, wanting the teeth usually found there.

Color dull testaceous-brown, almost uniform. Front with a row of obscure darker blotches next the carinæ, sometimes wanting. Median line of the tergum pale with a fuscous point on either side at each segment, the posterior pair usually extended in a line; sides of the tergum broadly black more or less interrupted by an irregular pale mark on each segment, the submargins of the segments with a black line either side the disk; edge of the connexivum pale. Beneath pale, the sides of the venter marked with fuscous. Legs pale, faintly lined with brown. Antennæ pale, cheeks with a brown spot at base of the antennæ. Anal tube black. Elytra nearly hyaline with whitish nervures, the marginal heavy. Pro- and metapleura with a row of fuscous spots. Male similar but with the dark markings more pronounced.

Male genitalia much as in *consimilis*. Aperture of the pygofer broad below but with the sides well rounded; ventral notch broad, moderately deep, with its fundus rounded. Stiles broadly divergent, short and straight. Apex of the anal tube forming a small lobe on either side below the middle but scarcely produced ventrally.

Described from two males and five females taken by Mr. Giffard near Stockton, May 30, 1917. This species is apparently quite near *magnifrons*, but is very distinct in the male genital characters.

Holotype (No. 382), macropterous male in collection of the California Academy of Sciences.

Allotype, brachypterous female, in collection of Mr. Giffard.

Paratypes in both collections and in that of the author.

355. *Liburnia occlusa* Van D. Mr. Giffard took a long series of this species on *Juncus lcsurii* at the following localities: San Francisco, July 13, 1917; Santa Cruz Co., June 9, 1917; Monterey Co., June 11, 1917; near Stekton, May 30, 1917. Macropterous examples were taken only in the San Joaquin Valley, but both there and in Santa Cruz Co. two forms of brachypterous females were found. The dark form described by me in 1897 and a pale form of an almost uniform testaceous-yellow color. In a long series an almost complete gradation is found connecting these two forms and this will possibly be found to be the case in the eastern *linea-tipes* as well.